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The Green Thumb

COLORADO'S GARDEN MAGAZINE



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The Green Thumb

Vol. 13 JANUARY, 1956 No. 1

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

OFFICERS

President.....Herbert C. Gundell
Honorary Presidents.....Mrs. John Evans, Fred R. Johnson
Vice-Presidents—Mrs. A. L. Barbour, Mrs. R. M. Perry, Mrs. George H. Garrey, Lemoine Bechtold, M. Walter Pesman, Earl Sinnamon, Mrs. J J. Waring, Mrs. Frank McLister and Dr. Moras Shubert.
Secretary-Treasurer.....Spiro L. Nickolas
Editor.....Patrick J. Gallavan

CALENDAR OF EVENTS

Jan. 7—Junior Workshop. Garden Center, W. Alameda Avenue and Kalamath Streets, 10:00 a.m.

Jan. 8-9—Lecture Program. "Colombia" Nicol Smith. Denver Museum of Natural History. Sunday Programs 2:30 and 4:30 p.m. Monday Programs 6:30 and 8:30 p.m.

Jan. 9—"Fun With Flowers." Garden Center, W. Alameda Ave. and Kalamath Streets. 10:00 a.m.

Jan. 9—Botany Club meets the second Monday of every month. 7:30 p.m. Horticulture House.

Jan. 11—Organic Garden Club meets the second Wednesday of every month. 8:00 p.m., Horticulture House.

Jan. 12-13 — 2nd African Violet Show. Sears Roebuck Garden Shop at 1st and University. Entries must be in before noon on the 12th.

Jan. 15-16—Lecture Program. "Pacific Adventures" Dwight Long. Denver Museum of Natural History. Sunday Programs 2:30 and 4.30 p.m. Monday Programs 6:30 and 8:30 p.m.

Jan. 20—Nature on Screen Series, "A Trip to Newfoundland" Dick Bird, Denver Museum of Natural History. 8:00 p.m.

Jan. 22-23—Lecture Program. "Crossroads of Man." Alfred Wolff. Sunday Programs 2:30 and 4.30 p.m. Monday Programs 6:30 and 8:30 p.m.

Jan. 29-30—Lecture Program. "Cuba" Hall Linker. Denver Museum of Natural History. Sunday Programs 2:30 and 4:30 p.m. Monday Programs 6:30 and 8:30 p.m.

Every Saturday—The Green Thumb Program on KLZ, 560 on your dial.

PATRICK J. GALLAVAN.....*Editor* MRS. HELEN FOWLER.....*Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. SPIRO L. NICKOLAS, *Custodians*

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION
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ANTICIPATING THE 1956 PLANT AUCTION

By FRED R. JOHNSON

THE annual spring plant auction is one of the sources of income for carrying on public service projects of the Association. Annually we have cleared from $500 to $800 from sale of plants, trees, shrubs, and garden equipment donated by nurserymen, seed and equipment dealers, and other friends of the Association. The auctioneers always give credit to our friends who contribute to this enterprise. Also the afternoon is always marked by lots of fun at the quips made by the auctioneer "Colonel" John Swingle and his staff of assistants, Earl Sinnamon, Pat Gallavan, George Amidon, George Stadler, and others.

It occurs to me that more of our members and friends can help in this project in ways that they may not have thought of. For example, how many of you have thought during the summer of changes that you would like to make in your gardens? Perhaps certain shrubs do not fit in the general plan for the garden, there may be perennials that are not harmonious in the color scheme, or that have spread beyond all due bounds, or seedlings of desirable trees that have sprouted and must be moved before your garden becomes a forest.

The same plants that you want to eliminate may be the very specimens that other gardeners are looking for. So next spring instead of dumping these plants in the alley for the trash collector, why not dig them up carefully with a clump of dirt around the roots and hold them in a shady spot for the annual plant auction sometime next April.

I can attest to the fact that this can be done. Last year we needed some space for a rose bed. A border of lilies of the valley had gone out of control, so I dug a swath of the lilies of the valley about two feet wide, hauled the clumps in boxes to Horticulture House where they were divided and placed in fruit baskets. They sold like hot cakes at $.75 or more a basket. The same thing happened with shasta daisies.

Then we have a large, thornless, honey locust in another section of the yard. It drops large quantities of pods and each spring a number of seedlings spring up. Some of these are not disturbed until they are whip size—three to five feet. They dig easily and each spring I have been able to bring a number to the plant auction. The thornless honey locust with its light canopy and lacy leaves is an especially desirable tree for Denver.

Not so easy has been the digging of a number of burr oak seedlings that came from a burr oak tree that we had to cut down last year before our garden turned into a jungle. I think one of the numerous pesky squirrels we have in our neighborhood buried a supply of acorns before the tree was removed. At any rate, a number of burr oak seedlings have come up in various spots in the garden. Even though the seedlings were not more than 30-36 inches in height, the roots are larger and it is some job to dig the entire root.

Well, at any rate you see the point —a happy combination of improving your own garden at the same time you are helping your fellow gardeners by making available plants for them for which you have no further use. In the process you are also helping the Association by supplying materials needed for the annual plant auction.

A TRIBUTE TO A GARDENER



The late Mrs. Daisy Hastings

IN the passing of Mrs. Daisy Hastings on November 11, 1955 the Colorado Forestry and Horticulture Association lost a good friend, and a good gardener who gave of herself without stint to make this city and this earth a better place in which to live. Her home and garden were artistic, and she contributed to the beauty of many other homes and gardens by the use of her talents. Her handwork adorns many gardens in this area in appropriately carved verses on redwood benches and plaques.

She assisted in the development of the Look and Learn Garden Visits in 1951 and in 1952 was the able chairman of the tours. Time and time again she responded to calls for help on committee work and served with the Editorial Committee of the Green Thumb publication.

In 1952 Daisy was one of the organizers of the Colorado Gladiolus Society, served as secretary, and helped in two successful shows. She won Amateur Sweepstakes at the 1955 show, held last August 7.

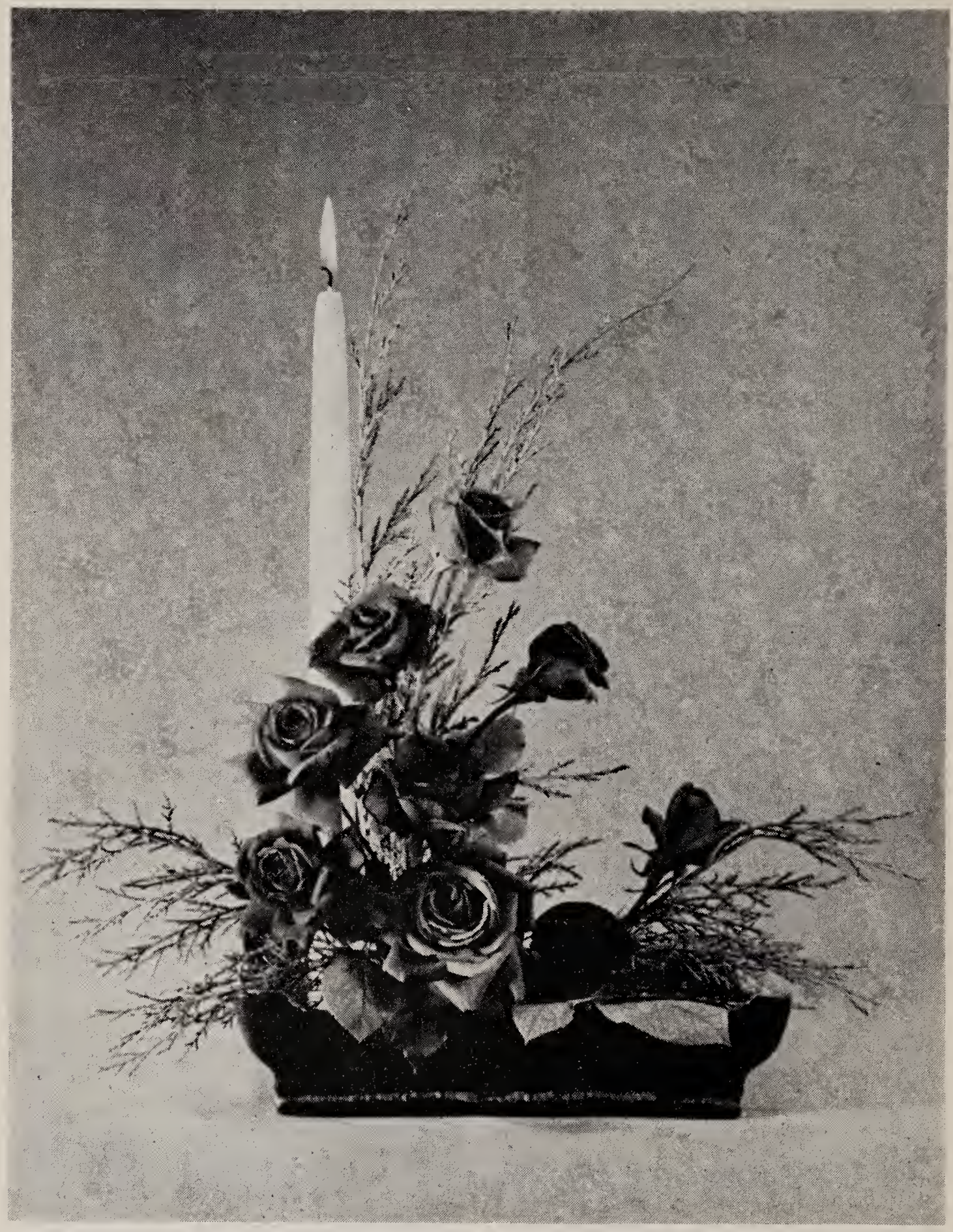
Her talent and generous nature contributed to other activities, such as those of the Montview Presbyterian Church, of which she was a member. She has been active for several years in the work of the Big Sisters Organization which gives a helping hand to young girls who need guidance and counsel to steer them through the rocky path of adolescence. At the time of her passing she was President of the Denver group.

She was a loyal, friendly person, always busy doing for others. These contributions to the good of humanity will serve as a living memorial to this kindly person who endeavored to do her bit for her family, her friends and the organizations in which she believed.

FRED R. JOHNSON



Her Trade Mark



ARRANGEMENT OF THE MONTH

THE Pfitzer juniper with its soft blue berries forms an ideal combination with the medium red of Happiness roses for a graceful mid-winter display. The black container and a white candle complete the picture.—Arrangement and photo by Mr. and Mrs. Ray Turnure.

OUR PARKS HERITAGE PERPETUATION & PROTECTION

By E. WALLACE, *Director Parks Planning & Design*

DENVER, except for its summer notoriety for water shortage, is best known for its park system. The things people remember about Denver, above all else, are our green lawns, beautiful trees, refreshing lakes, and long stretches of shaded parkways. Many have come to live here because of these things. Most of us, come to think of it, are here for the same reasons. Nothing contributes more to the stability of real estate and a city's economy than its livability. Can you imagine driving through Denver on a hot summer day without the cool shade of a parkway arched with protecting elms, or the wide expanse of lawn offered by that shortcut through the park?

It's no secret that most of us have to work harder for the dollar we earn in Denver than in most other cities, but we stay because we like it here. People were moving into Denver when there were already more people than jobs. Was it opportunity they were seeking, or a livable city?

Are we perpetuating this kind of city in the Greater Denver? When times get rough again, what will the thousands of people do who are buying new homes with nothing down and $60.00 a month? Will they move on, leaving Denver with slums and tax delinquent land, or will they stay because Denver is a clean, beautiful city? We cannot under-estimate the value of the City Beautiful.

Denver was once like most of our new subdivisions—barren and dusty and hot. It took courage to build parkways out into the barren wastes of "Kansas", but look at the beautiful residential development that it brought to Denver. It took courage, when money was scarce to borrow, to build City Park, Washington Park, Berkeley Park, and others. People were tired of the dirt and the heat. No sacrifice was too great. The parks they built were monuments of beauty. Not only did they build us examples to follow; they provided us with more land on which to build future parks.

Such is our heritage—how do we carry it on? What of the future that will, in time, become the past?

Most of the undeveloped land we inherited is now scheduled for development under the parks and recreation bond issue program. Some new sites are to be acquired. We are proud of the people of Denver for showing by the passage of the Bond Issue, that they want to continue the job so generously begun.

It would be ungrateful, at this point, to cry, "too little and too late" for, without the two million dollars we could not begin to restore the trusts that are ours nor develop the sites planned and provided for our enjoyment.

But—the fact remains that one million of the bond dollars must go towards the rebuilding of water systems in existing parks where "moth and rust doth corrupt." Another $900,000 will go toward new development of existing sites and only $100,000.00 for acquisition of new sites so desperately needed.

Land is no longer cheap, and yet, in respect to those who went before us, and in obligation to our children and our children's children, we cannot wait until the land is gone! WE CANNOT BE PENNY WISE AND

POUND FOOLISH! The amount provided in bond money is not sufficient to make a dent in our park and recreational needs, but we trust that it will be put to such good use that Denver's citizens will say, "Well done, thou good and faithful servant: thou hast been faithful over a few things, I will make thee ruler over many". The sites we are recommending for Bond purchase have been selected with the utmost care and planning to provide open space and play area where it is needed most. Most of the sites are tax lands in order that we may stretch our dollar to the limit. Anyone who knows the city will find many more areas of urgent need that have not been included. We, who have studied the growth and needs of the city, are keenly aware of these deficiencies. In one section of the city where juvenile delinquency is at its highest, and density of popuation is greatest, 36,000 people use 17 acres of park and playground. Can you imagine a city of 36,000 people—only a little larger than Boulder or Greeley—with only 17 acres of park and playground? That is less than one-half of an acre per 1,000 people.

A study of 68 cities showed that the average provision of park and recreation land was 5.7 acres per 1,000 population. Fourteen of these cities had over 10 acres per 1,000. Denver as a whole has about 5. But some areas are 100% deficient. Can we afford to let Denver grow without providing the beauty that keeps the city healthy and alive and that makes the kind of citizens we want our children to be?

We would not be covetous of our neighbor, but we realize the need for greater faith and keener vigilance. The exponents of other enterprises have suddenly discovered they need, in increasing quantities,the one thing we cannot do without in outdoor recreation facilities; i.e. SPACE,—lateral, vertical, open space.

A manufacturing corporation once content with 2 acres of lot space for each acre of factory space now needs an optimum of 8 acres of lot space for one of factory space. Suburban residences, once on 1/8 acre lots, now require 3/8 to 1/2 acre or even one acre lots. Highways are now widened from 66 feet to 200 feet or more. The new suburban shopping centers have a ratio of up to 70 acres of parking space to each 9 acres of building space. This demand places vacant land at too high a premium for the modest budget of a municipal parks department. What seemed like a plethora of space available for recreation is summarily claimed by all of these and other facilities, even to the demand that some of the SPACE ALREADY DESIGNATED FOR PARKS BE USED FOR OTHER PURPOSES! In fact, acquiring additional lands while they are available is one thing —preserving those we have is another. The scripture, "For unto every one that hath shall be given and he shall have abundance, but from him that hath not, shall be taken away even that which he hath" is certainly a word to the wise.

The location of expressways for multiple-type traffic in existing parkways or through parks to save land and construction costs or to simplify engineering, threatens to "take away even that which he hath."

So potent is this threat that, at the annual meeting of the American Institution of Planners, in Kansas City, in March, a workshop was set up with the subject, "The preservation of public Open Spaces."

It was agreed unanimously that public open spaces should not be considered as vacant lands subject to a "higher use" for there can be no higher use than beneficial out-of-door activities.

The cry by promoters of other uses and facilities that the need for their enterprise supersedes those for park and open spaces is a dangerous one.

For example, the Michigan Turnpike Authority has been given, by act of the state legislature supported by circuit court decision, powers of condemnation superior to that of urban authorities, leaving the latter without protection or defense of the rights of the common people. This turnpike authority proposes to run a broad multiple-use-high-speed motor and trucking thoroughfare for a distance of 5 miles through the west-side parks of Detroit, thereby detroying the usefulness of hundreds of acres of developed park land for recreational purposes.

It can happen here! Expressway plans are nearing completion for a route that will bisect Rocky Mountain Lake and Berkeley parks. This expressway should be located outside the Denver City limits in open country where the service rendered would be not one whit less and yet not be destructive of the property and rights of the people.

Denver has recently extended its southwestern boundaries to Bear Creek and Sheridan Boulevard. This Bear Creek area could have been adapted ideally to park development. The extension of Hampden Avenue was scheduled to destroy practically all of the natural setting of Bear Creek. Park authorities have been negotiating with State Highway officials for many months in an effort to work out an alignment.

A solution has been reached which, at best, is only a compromise. Even Mountain Parks are not immune. Bear Creek Parks also have been threatened by highway changes.

The widening of Federal and Speer Blvds., the widening and extension of Forest Drive, realignment of 14th Avenue through the Civic Center, the one-way system along the west side of City Park, and other traffic projects threaten us continually. Fortunately these are within the City Family and are easier to resolve but the problem of traffic vs. parks becomes increasingly acute.

At the meeting in Kansas City, the panel concluded that, "Admitting the grave necessity of expressways into and through urban areas, they must be located where they will be most *convenient* and effective. Cost is definitely a secondary consideration. Shifting location to save a few thousand dollars by using public park land is short sighted. However, if parks are definitely in the line of the best location and *no other* location is possible, then the park board must be liberally compensated for the loss of valuable park recreation land to enable replacement to be made where most needed. Taking such land without compensation is reprehensible public management."

To enforce a program such as this, the parks authorities must have the courage of their convictions and the support of sympathizers such as the Colorado Forestry and Horticulture Association, the Garden Clubs, the Nurserymens Association, and others. They must be armed with facts and principles and sound reasoning and be ready to use these weapons.

They need YOUR support!

DENVER BOTANICAL GARDEN

By MRS. JOHN EVANS



Mrs. John Evans

IN 1951 the Botanical Gardens Foundation of Denver Incorporated was organized, and 100 acres surrounding the Denver Museum of Natural History in city park was set aside by the city to be developed as a Botanical Garden.

A master plan was designed for this area by Mr. S. R. DeBoer which was accepted by the city and the Botanical Gardens Foundation of Denver, Inc.

An agreement was entered into between the city and the Botanical Gardens Foundation of Denver, Inc., in which the Foundation would act as regent for the city to carry out this master plan.

Each year the mayor and council consider the budget submitted by the Foundation, and allot for the succeeding year the needed funds for maintenance and for preparation of ground where donated material is to be planted.

The first plantings were made in 1953, west of the Museum of Natural History. A very choice collection of lilacs was donated by the late Milton J. Keegan and was planted bordering what is now known as "lilac lane."

A donation of over 47 varieties of crabapples was made by Mr. S. R. DeBoer. Through the Denver Rose Society, 3500 roses were planted in the Rose Garden, a truly spectacular showing. To the southeast of the Rose Garden, tucked under wide spreading trees, is a lovely collection of ferns donated by Mrs. Helen K. Fowler and to the west of the Rose Garden along Lilac Lane a fine collection of hemerocallas was donated by Mr. Lemoine Bechtold.

In 1955 the Iris Society planted 1000 iris rhizomes in their Rainbow Iris Garden, north of Lilac Lane.

South and east of the museum is the distinguished collection of several hundred evergreen trees donated by Mr. Robert E. More.

Records are being kept of all plants in the garden and information on these plant histories is available at the Botanical Garden office, which is on the south side of the museum building.

The 1956 budget allotted by the city for the first time provides funds for a major project. The Foundation will now be able to construct "south creek" an area south of the rose garden. This will include a box canyon water fall and pool. From here a brook will wind its way down the sloping ground to a small lake. Bordering this brook and lake, water-loving trees and shrubs will be planted

and an ecological collection of plants donated by Mr. W. H. Ferguson.

The box canyon will be a natural for native plants. These will be donated by Mr. M. Walter Pesman and The Garden Club of Denver.

This has been an interesting five years of planning and planting and many worthwhile contributions have been offered by individual garden clubs. We are so grateful for their interest and trust that they will bear with us until the time comes that we can have a proper place and adequate maintenance for all these gifts.

Our thanks go to these friends who, through their interest and cooperation, are helping to make the Botanical Garden a great asset to Denver, educationally and culturally. Many will visit the garden to enjoy the beauty. Others will go to learn by seeing labeled growing plants and to learn about their culture.

The following is a list of contributors for 1953-1954-1955:

French Lilac Collection—49 varieties—Mr. Milton J. Keegan
The Glenmore Pinetum—279 evergreens, 147 varieties—Mr. Robert E. More
Flowering Crabapples—26 varieties—Mr. S. R. DeBoer
Fern Collection — Helen Fowler Library Council
Roses—4,136 plants—Denver Rose Society
Hermerocallis Collection — Mr. Lemoine Bechtold
Iris Rhizomes—1,000—American Iris Society, Region 20
Tulips—1,500 bulbs—Denver Dry Goods Company
Tulips—4,000 bulbs—Mrs. John Evans
The Denver Museum of Natural History
The Washington Park Garden Club
The Colorado Forestry and Horticulture Association
The Garden Club of Denver
The Perennial Garden Club
Walter S. Cheesman Realty Co.
Mrs. Alexander L. Barbour
Dr. John S. Bouslog
Mrs. Julia E. Carruthers
Mr. Everett L. Cline
Mrs. Henry J. Conrad
Dr. J. R. Durrance
Mr. W. H. Ferguson
Mrs. Theron Field
Mrs. George H. Garrey
Mr. Maurice N. Marshall
Mr. M. Walter Pesman
Dr. Moras Shubert
Mrs. Robert G. Stovall
Mr. John W. Swingle
Mrs. James J. Waring
Mr. Scott Wilmore
Mrs. Hubert Work
Cottonwood Garden Shop
Green Bowers
Euser Seed Company
Colorado Toro Company
Swingle Tree Surgery Company.

And many others, who through their interest and cooperation are helping to make the Botanical Garden a success and an asset of which all Denver may be proud.

Congratulations to our fellow gardener Jacob V. Schaetzel, on the award of merit plaque commemorating half a century of community service. This was presented to Mr. Schaetzel by the Robert W. Speer club at its annual luncheon on November 30, which also marked the 100th anniversary of the birth of former Mayor Speer. The Schaetzel plaque bore this inscription, "given in recognition of his untiring labor to promote pioneer Denver history, legal aid for the poor, and civic interest."

We would like to draw attention in this number to a couple of articles on the Chicago Creek Road between Idaho Springs and Echo Lake. We welcome such articles, dealing with important, up-to-date problems. Honest differences of opinion will generally lead to a better understanding.

If you are interested, how about looking over the road in question and making up your own mind?

Every Tuesday—Museum Pictorial on KLZ-TV channel 7.

LILAC LANE

By BERNICE PETERSON

"LILAC LANE," a living memorial to its donor, the late Milton J. Keegan, winds northwesterly from the museum to exhibit 76 lilacs including 49 different named varieties, some imported directly from LeMoine's Nurseries in France for the Denver Botanical Gardens.

Twenty-four varieties produced a show this year, a good average since the shrubs were moved to their permanent location in the arboretum in the spring of 1954.

According to Miss Bertha Durfee, "Firmament," which started blooming May 6 and continued for two weeks, produced magnificent blossoms of light lavender-blue. *President Lincoln,* the truest blue available with single florets, bloomed May 2, the earliest of the collection to bloom. Others making outstanding showings last spring were *Leon Gambetta,* a double pink which changes from pink to lavender-pink and has many blossoms; *Mrs. W. E. Marshall,* a single reddish-purple which bloomed about May 16 and is very showy; *Blue Hyacinth,* which produces single flowers similar in shape to those of a hyacinth; *Monge,* very floriferous; *George Bellair,* which is predominately reddish in the reddish-lavender category and semi-double, and bloomed late in the season; *Macrostachya,* a light pink, also very floriferous, finally faded to almost flesh color, which might prove to be its fault. When asked to enumerate the ten top lilacs for this region and growing in Mr. Keegan's lilac collection at the Botanical Garden, Mr. Lemoine Bechtold selected the following:

1. *Massena,* easily identified by its big heavy leaves, is the largest flowering one, having extremely large panicles of gorgeous red buds that develop into reddish-purple flowers. Requiring full sun, it should not be planted near buildings, trees, or tall shrubs.

2. *Captain Baltet,* one of the best all-around lilacs, will grow anywhere, and the buds will withstand freezing temperatures to 20 degrees without blighting. Reddish-purple in bud, the sun seems to emphasize the red qualities in the blossom. At maturity, the bush is about six feet in height, and when in the sun and with favorable conditions, Captain Baltet has produced blooms at 24 inches. In contrast, it was pointed out that in most instances the lilac, *Katherine Havermeyer,* a very desirable pink, will not bloom until it reaches maturity.

3. *Firmament,* a very desirable variety of blue with single florets develops into a bush eight feet or more high, and is very beautiful.

4. *Monge* has single florets, large panicles of red, is medium late in the blooming period.

5. *Duc de Massa,* which attains a height of 10 feet, blooms fairly young with double florets resembling perfect fully-double rosettes. A blue-red as it opens, the florets become more bluish and sometimes the reverse of the petals differ in color from the face.

6. *Leon Gambetta,* with little buds resembling leather, has large panicles of double pink flowers and pointed petals. The shrub is about six feet high at maturity. Etna, incidentally, is very similar but often is attacked by a yellow pest which eventually may destroy the shrub.

7. *Ami Schott,* a blue-red, similar in color to *Duc de Massa,* but with a greater intensity of blue, and with

each little floret a complete double flower.

8. *Blue Hyacinth* is of upright growth, neat at base and deep-rooted.

9. *Edith Cavell,* best known of the double whites, has a national rating of .92 and was introduced in 1916.

10. *Reaumur* is a heavy bloomer similar in color to *Captain Baltet* but more dwarfed in size and blooms at short height.

Asked to describe some of the other outstanding varieties which the visitors to the gardens might like to study, Mr. Bechtold explained that one of the newer white lilacs, *Monument,* introduced in 1934 by Victor LeMoine, has produced gorgeous large panicles of single white blossoms both times it bloomed since planted in his garden five years ago.

Ludwig Spaeth is a reliable favorite in a class by itself. Although its panicles are not as large as those of some varieties, it is a heavy bloomer, does well in this area, and is different in color, having a great deal of blue in its purple coloring. Another attractive lilac is *Paul Thiron,* which blooms at about five feet, with reddish-purple flowers, duplicates of double violets. A sure bloomer is *Night,* whose buds hesitate to open in early spring and seem to wait until the season is safe. It is almost black in coloring.

Glory has very large reddish florets and although considered a very fine plant with beautiful flowers, its growing habits are poor; it spreads with stolens and the bush is shaggy and irregular.

Generally, small city gardens are confined to using small shrubs. *Lucy Baltet* fits this requirement and has single bronzy-pink flowers with a medium-late blooming period.

As a suggestion, Mr. Bechtold offered that every lilac collection should have at least one *Chinensis,* which is similar to *Persica,* the difference being in the leaves. *Persica* originally came from China, but the misnomer occurred when the first persons to obtain the variety found it in Persia. French lilacs were originated by Victor LeMoine in France.

The lilac issue of the GREEN THUMB, edited by Mr. Keegan and illustrated with many color and black and white plates, is a valuable publication containing the essence of knowledge available on lilacs grown in the Rocky Mountain region. Copies are available at Horticulture House.

Another valuable publication helping those interested in obtaining information is found at the Botanical Garden in "Lilacs for America," published by Arthur Hoyt Scott Horticultural Foundation, Swathmore College, Swathmore, Pennsylvania. It may be purchased for one dollar from Swathmore College or is available for reference at the Helen Fowler Library. This booklet lists every lilac grower in the United States and lists almost every variety grown, its national rating, and where it may be obtained.

Classifying lilacs by color is very difficult since variations occur when a floret is cupped, edged with white, or the color is different on the reverse of the petals. All of which illustrates the most valuable feature of the Denver Botanical Garden—it enables visitors to examine the plant for coloring, size of bloom and panicle, and height and spread of plant. Visitors may also learn to their satisfaction whether or not particular varieties sucker from the base, have good habits of growth, are leggy or shaggy, and ultimately, whether or not their growth habits and period and color of bloom, fulfill the requirements and growth conditions for their own personal gardens.

A list of the named varieties growing in "Lilac Lane" follows:

Vestale
Night
Glory
Mrs. W. E. Marshall
Lucy Baltet
Massena
Edith Cavell
Marechal Foch
Maurice Barres
Captain Baltet
Macrostachya
Clark's Giant
Mme. F. Morel
Oliver de Serres
Pres. Fallieres
Esther Staley
White Swan
Duc de Massa
Katherine Havemeyer
De Mirabel
Reaumer
Prodige
Pres. Lincoln
Monge
Leon Gambetta
Etna
Firmament
Edward Andre
Geo. Bellair
Capt. Ferroult
Mme. Souchet
Paul de Chanet
Ami Schott
Syr. Chinensis saugena
Blue Hyacinth
Diderot
Victor LeMoine
Emil Gentil
Ludwig Spaeth
Virginite
Rosace
Morengo
Henri Robert
Decaisne
Mme. A. Buchner
Charles Joly
Rouen
Paul Thiron

THE GLENMORE PINETUM OF THE DENVER BOTANIC GARDEN

By ROBERT E. MORE

IN the spring of 1954 Mr. S. R. DeBoer drew plans for the evergreen unit of the Botanic Garden. Many yards of rich soil were fashioned into the artistic Mound immediately southeast of the Museum of Natural History in City Park, and 250 evergreens comprising 130 different varieties were planted on the Mound and in the three other areas that Mr. DeBoer had set aside for the evergreen collection. One of these was immediately north of the museum where there is virtually all-day shade and complete protection from the south and west winter and spring winds. In this area are placed all the "problem children", such as yew, arbor vitae and falsecypress trees. A number of pine varieties were planted northeast of the museum in the area bounded by Colorado Boulevard, Montview Boulevard and 22nd Avenue. There was already in this area an interesting pine collection, consisting of two magnificent scotch pines, and a number of pinyon, Austrian Swiss Mountain, and Ponderosa pines. The final area is immediately west of the Mound on the west side of Sycamore Drive, which area already has a number of magnificent Blue and Black Hills Spruces and will constitute the spruce unit of the collection. In the spring of 1955, 30 more trees were added constituting 18 varieties, and about 50 additional varieties were started in pots in the lath house of the City Nursery.

A few of the many evergreens on the Mound at City Park



Lists of trees are always tedious. It may be of interest, however, to enumerate by number and groups the type of evergreens in the Pinetum.

Of course, in the fir group, our beloved native Concolor or White Fir will be predominate. It is the hardiest fir in the world, of magnificent form and proportions, and its numerous attractive colors are now being perpetuated by grafts. We have also placed in the Pinetum specimens of Balsam Fir, Southern Balsam Fir, and Needle or Manchurian Fir. The firs are north of the museum and towards the front.

Two species of falsecypress and one hybrid are being tried. The specimen of Nootka Falsecypress being a graft from my own hardy tree should do very well. The Sawara species is very doubtful in Colorado, although this individual plant prospered for four years in my yard before being moved to City Park. A hybrid cross by Leyland of a cypress and a falsecypress is wholly experimental.

Next, may be mentioned the group of deciduous conifers which eventually will be placed west of Sycamore Drive and to the south of the spruce unit. In this group we have ginkgo, golden larch, baldcypress and dawn redwood. Some of these are completely experimental. To this group will soon be added eastern, European and Japanese larch.

The juniper unit will be an outstanding one. Junipers like Colorado, and I have been fortunate enough to be able to learn of many sources for this interesting plant in other areas and countries. The following species of juniper are in the Pinetum: chinensis, communis, conferta, horizontalis, monosperma, occidentalis, pachyphloea, procumbens, sabina, scopulorum, utahensis and virginiana. In these twelve species are found over 100 varieties that exhibit growth forms from spreaders a few inches high to symmetrical columnar trees that will ultimately attain a height of 40 feet; and all types of texture and color. The juniper collection will ultimately extend to the south of the Mound up to the point where the proposed widened Colorado Boulevard and 17th Avenue cut into the present south and west boundaries of City Park.

The spruce group has 10 varieties. The douglas fir group will have at least a half dozen types when those in the lath house grow up, and the pine group has 16 varieties now, and unquestionably, will soon have more than 25.

A half dozen yew clons (varieties propagated by grafts or cuttings) and about 8 arbor vitae clons complete the existing collection. The last two groups would, of course, burn up in one winter if placed on the Mound, but in their protected location will probably do very well.

The inevitable transplanting loss, which occurs when almost 300 evergreens are moved, took place. In addition, it was impossible to "space" deliveries. Both carload and truck lots were brought to Denver from Chicago, Kansas City and Fremont, Nebraska, and less than carload lots from many other areas. They all arrived at about the same time, and in spite of having been put under cover and sprinkled daily, some dried out before they could be planted. Even with all these difficulties, almost 90% of the plantation was alive and flourishing in June 1955.

One of the primary purposes of the Denver Botanic Garden is to grow varieties of plants that can "take" Colorado's very difficult climate, in a setting where the various individual trees can achieve uncrowded, full development. This will permit Colorado residents who are confronted with the eternal problem of, "What shall I plant around *my*

home?" to go out to City Park, learn the name of desired trees from the labels upon them and inquire of the Director whether or not the trees selected have idiosyncrasies. At the same time the Botanical Gardens Foundation of Denver, Inc. will have created a beautiful and unique Denver area that our citizens can be proud of.



Hopa crabapples in bloom on the Speer Boulevard parkway

FLOWERING CRABAPPLES IN THE BOTANICAL GARDEN

By S. R. DEBOER

FOR you to fully understand the purpose behind the collection of trees of this kind in the Botanical Garden, I must tell you the background of the ornamental apple trees in the Denver region.

A few years ago, there were two red-flowering crabapples in Washington Park, and they were probably the only ones of this kind in the Denver region. They are still there and they became the incentive to try a larger planting of these red flowering apple varieties. Denver had had many common white flowering apples, but none of them were the red ones.

The Downing Street Parkway, from Cherry Creek to Bayaud Avenue, was planted with the Floribunda purpurea, one of the most attractive varieties at that time. They proved hardy, but after a couple of years they were damaged by being hit by hand mowers and by scale insects. In spite of that, they were such a success that there was a demand for a longer line of red flowering crabapples. The planting was continued along Cherry Creek, but in these plantings the Hopa Crabapple was used and, step by step, these trees were introduced along the Cherry

Creek banks. The Bechtel Flowering Crab was planted on the Marion Street Parkway, on the entrance to Washington Park. Eventually, it was hoped to get a cross-town trail of red flowering apples. They were, also, planted in Berkeley and Rocky Mountain Lake Parks, but the line between these areas was not completed.

The planting by the City Parks was received with tremendous enthusiasm by the people of Denver, who ordered red flowering crabapples from the nurserymen by the hundreds. The thought of using these trees appealed to other cities and there was a period when the growers of the United States could not keep up with the demand for the Hopa flowering apple.

This is, perhaps, one of the most outstanding illustrations of what the Botanical planting may do for a city in assisting its people to plant unusual varieties. It was with this in mind that the Botanic Garden created a collection of flowering crabapple trees. The Botanic Garden, at present, has 28 varieties: namely, the following:

Malus cl. 'Almata Crabapple'
M. Cl. 'Dolgo'—Dolgo Crabapple
M. cl. 'Irene'—Irene Crabapple
M. cl. 'Jay Darling' — Jay Darling Crabapple
M. cl. 'Katherine' — Katherine Crabapple
M. cl. 'Kingsmere'—Kingsmere Crabapple
M. cl. 'Makamik'—Makamik Crabapple
M. cl. 'Marshall Oyama' — Marshall Oyama Crabapple
M. cl. 'Wabiskaw'—Wabiskaw Crabapple
M. adstringens cl. 'Hopa' — Hopa Crabapple
M. atrosanguinea — Carmine Crab. apple
M. brevipes — Nippon Crabapple
M. coronaria nieuwlandiana—Nieuwland Crabapple
M. floribunda — Japanese Flowering Crabapple
M. fusca — Oregon Crabapple
M. Hartwigii — Hartwig Crabapple
M. ioensis cl. 'Nova' — Nova Crabapple
M. ioensis Palmeri — Palmer Crabapple
M. magdeburgensis — Magdeburg Crabapple
M. micromalus — Midget Crabapple
M. cl. 'Oekonomierat echtermeyer'—Echtermeyer Crabapple
M. purpurea — Purple Crabapple
M. purpurea aldenhamensis—Aldenham Crabapple
M. purpurea lemoinei — Lemoine Crabapple
M. robusta erecta — Upright Cherry Crabapple
M. Sargentii — Sargent Crabapple
M. spectabilis—Double Chinese Crabapple
M. toringoides—Cutleaf Crabapple

It is hoped to add to this 40 more varieties in 1956, bringing the total up to about 70 varieties. So far, none of the apple varieties have died on account of winter damage and it is believed that nearly all of them will prove to be hardy. With this great number of varieties, it will be possible for the people of Denver to go to the Botanic Garden in the springtime and select the kind of trees they want to plant, and it may stimulate the growing of these trees in Denver. After all, this is a Denver type of planting.

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FERNS OF THE ROCKY MOUNTAIN REGION

By HELEN K. FOWLER

PLANTS form the natural covering of the earth's surface and are so variable in size that a microscope must be used to discover some of them. Besides the trees which are examples of the largest organisms in the plant kingdom, there are mosses, lilies, lichens, algae and the large group of ferns.

There are many species of ferns found throughout the world but only a few are hardy in Colorado. Some others have been tried here but with little or no satisfaction. I have seen the Christmas and the Cinnamon ferns doing very well in Boulder for the climate there is more suited to ferns as it is to so many other plants.

At City Park the ferns are planted close to the rose beds and opposite the Denver Museum. Mrs. Evans tells me, however, that she will make some place changes. There are 1000 ferns in the group, many of which failed last year due to lack of moisture. These will be replaced this coming year.

Out at the park we have the ostrich ferns, the lady, the Maidenhair, and the Colorado male. Using these kinds you can easily have fern beds of your own. If you do not care for just one species of plants, you may add the large, spiney-leaved Funkia subcordata grandiflora and in the fall tulips may be added for spring color. For a margin, the low-growing blue violets may complete the bed. All the plants used here like the same environment, that of shade.

Although ferns are recommended for shade only, I have planted them in quite a bit of sun. As long as I watch the moisture, giving them water every day, they succeed quite as well as in the shade. A liberal supply of water must be given ferns during the growing season. Be careful not to apply the pressure of water to the fronds (foliage) but place the hose on the ground and water the roots only. Strong plants should be set out about 14 inches apart, all except the ostrich which needs more room. The varieties with a crown should be planted level with the surface of the ground while those growing from underground root stocks should be planted just below the surface. What Burnham Hoyt said to me one day comes to mind at this time. "The ferns," he said, "are as lovely as the roses." Burnham Hoyt, you know, is one of our distinguished artists.

To see proof of Mr. Hoyt's statement it would be pleasant to visit Mrs. John Evans' garden, especially in the spring when the ferns are beginning to unfurl. At the base of a series of steps the plants are backed by a high wall with a black iron gate at the end. As you look back from the gate you will know what is meant by "a garden is a lovesome thing."

Mrs. Frank McLister has her ferns growing south of a west wall where evergreens and yellow jonquils are planted. In this fern area there is an apple tree and a handsome fence which provide shade for the ferns. Mrs. McLister has made her entire place most attractive. Drive by on Westwood Drive and see.

Mrs. George Garrey has a garden with a cropping of ferns planted under tall poplar trees. When her special variety of white tulips are in bloom in spring you will see a pic-

ture seldom seen in any garden—a scene all in green and white.

The following is a short description of ferns growing at City Park which you might enjoy having in *your* garden.

Adiantum pedatum (*Maidenhair fern*)

Height: 10-20 inches

Habitat: rich loamy humus soil, not too dense shade.

Description: Delicate, lacy fronds, black wiry stems spreading by root stocks. Easily cultivated and one of our most beautiful ferns.

Athyrium Filix-femina (*Lady Fern*)

Height: 16-32 inches.

Habitat: Moist acid woods and likes a thicket. Not too dense shade.

Dryopteris (*Aspidium*) *Filix-mas* (*Male fern*)

Height: 12-36 inches.

Habitat: Moist rich soil. Likes any shade. Nearly evergreen.

Pteretis (*Onoclea nodulosa*) (*Ostrich fern*)

Height. 20-60 inches.

Habitat: Rich moist, loamy soil. Likes swamps also but not dense shade.

Description: Produces clusters of fronds, vase-like in form. It is a rapid spreader by underground root stocks. Fronds are plume-like. Mrs. Morse calls this plant dramatic.

In the above scientific nomenclature Bailey's Hortus has been consistently followed. If any further information is needed or wanted the following books should be extremely helpful. Field Book of Common Ferns by Herbert Durand, Our Ferns In Their Haunts by W. N. Clute, Ferns and Their Allies by Underwood. These and a dozen other volumes are to be found on the library shelves. Go out to City Park one of these days and see what Mrs. Evans is doing for us and for the city of Denver and plan to have a fern garden this year to find out for yourself what "a lovesome thing" it can be.

For a change, there was an over-supply of material available for The Green Thumb—so much so that additional stories on the Botanical Garden and Parks will find their way into the February issue.

The AMERICAN ASSOCIATION OF BOTANICAL GARDENS AND ARBORETUMS, at its August meeting in Santa Barbara, Cal., had representatives of ten Botanical Gardens and Arboretums. The Garden Club of America, the California Garden Clubs, and many other important horticultural organizations were also represented, not to mention horticultural, botanical and forestry departments of universities. This national organization was founded September 1940, and has, among other things, made a compilation of The Arboretums and Botanical Gardens of North America.—MWP.

Not generally known is the good deed done by Mr. J. N. Withers, Mr. and Mrs. Howard Housley, Mrs. Fred Sandholm, and Boy Scout Troop 15 of whom Mr. Housley is the leader. These good people transferred their activities, after the work on the iris beds was finished for the Botanical Garden, to Sewall House, center for crippled children, where they planted another iris bed to help cheer the children along on their sometimes long and tedious road to recovery. Mr. Withers contributed the rhizomes which were planted along the north side of the house.

ROSES ARE A FAVORITE

By VELLA CONRAD

ROSES are universally loved and grown. The title "Queen of Flowers", so rightly earned, places them in a focal position—be it roses grown as a hobby in a home garden or in quantity in a municipal garden.

In the Rosarium at City Park we have some 135 varieties, growing in beds of 50 plants, totaling over 3500 bushes, including the floribundas which are grown in long ribbon type beds, in the center of the garden. As the garden grows and new types and varieties come out additional beds will be designated. The master plan calls for a place for all types; species, shrub, hybrid perpetuals, climbers and pillar roses, as well as the hybrid teas, floribundas and the recent grandiflora class.

Ours is a very new project. As we work with the roses, many ideas come to us for making this more educational and at the same time beautiful. Test gardens are a must, especially in this region, and there is the dream of hybridizing, to develop a fool-proof understock, disease-resistant and climatically adjustable. Hybridizers over the world are working constantly to produce a rose with all the qualities of perfection.

For the present we must concentrate on what is the maintenance part of growing roses. Many people feel that they are hard to grow, but they really aren't. Roses do require special care, and this care has to be modified to the climate you have to contend with, and the diseases peculiar to your locality.

The fundamentals or basic rules for growing roses are applicable to any location where it is possible to grow a vegetable garden. These ten points called the "Rosarian's Creed", as stated by March E. Morse in the American Rose magazine, when followed carefully will produce good roses.

1. "I will have no other flower before thee. For verily the Rose is the Queen of all."
2. I will buy good plants.
3. Select garden site, thoughtfully.
4. Prepare ground, thoroughly.
5. Plant, carefully.
6. Cultivate, diligently.
7. Fertilize, frequently.
8. Water, copiously.
9. Spray, specifically.
10. Prune, intelligently.

In actual practice this is not at all complicated. For each hour of time and dollar spent roses probably outperform most any plant. In this area they bloom from June until frost. For many of us roses are a way of life—a contact with the "Master Gardener". You can not grow roses without realizing what a small part you have to do with the miracle of it all. This little poem composed by Bernice Petersen expresses it so well.

Some worship at marble-carved altars,
 At Cathedrals with great spires
Some find Him in a sermon
 Joyous singing of a choir.
I simply walk thru my garden
 Softly whispering a prayer,
For as I look into the heart of a rose
 I know that God is there.

References on roses in this area, Green Thumb, April 1954, Feb.-Mar. 1955, June, 1955.

COLORADO GLADIOLUS SOCIETY HOLDS BULB AUCTION AT HORTICULTURE HOUSE, THURSDAY, FEBRUARY 9th AT 8 P.M.

Color slides of outstanding varieties and arrangements will be shown. Plan to attend, all are welcome.

HEMEROCALLIS

By BERNICE PETERSON

THE exquisite beauty of the highly-developed "lemon-lily" of grandmother's dooryard garden may be enjoyed by enthusiasts throughout the region by visiting the Hemerocallis collection in the Botanical Garden.

About 250 plants with more than 100 named varieties is a gift of LeMoine Bechtold, who, as a hobbyist, develops new varieties of hemerocallis, iris, lilacs, bulbous lilies, and other plants.

Planted between the lilacs and near the roses, the collection will eventually include 250 varieties, many from Mr. Bechtold's 4,000-6,000 seedlings growing in the south and west gardens at his Cherry Hills home.

The day-lilies planted at the Botanical Garden will be tagged during their blooming period next summer. Most of the varieties included in the collection at City Park are medium to late bloomers, since the "hem" display was planned not to compete with the iris display early in the season.

Among the 30 named varieties originated by Mr. Bechtold, and included in the collection, are *Moon Mist,* a pale chartreuse, *Glory,* a large yellow open-faced with broad trumpet which won national citation, *Bronze Glow* which is reported to have bloomed for 122 continuous days in an eastern garden; *Kindly Light* one of his best, a pale yellow; and *Shirley Wild* the largest "hem" on the current market, a golden yellow variety, named for the daughter of Allen Wild, who tests and introduces Mr. Bechtold's hybrids at Sarcoxie, Missouri.

Beginning in 1922 with five varieties purchased from Bertrand H. Farr and including the species, *Flava, Fulva, Middenforfii, Citrina* and *Thumbergi,* Mr. Bechtold noticed that the last species refused to throw a seed pod. Expending much additional effort on the limited pollen available, he finally induced the plant to develop one seed pod with seven seeds. These seven seeds produced plants of such unusual character as to spark the beginning of his excursion into the field of hybridization of "hems."

Included among his first are the spider daylily. This year brings the introduction of the first purple spider daylily (purple is a new development in "hem" coloring). Credited with one of the first chartreuse daylilies, he hopes to have developing in his greenhouse at the present time, a blood-red, shaggy variety.

Visitors to the Bechtold gardens will deplore the fact that none of his brown varieties have been introduced. *Bridal Veil* formerly *Shalimar,* a delicate yellow of beautiful texture is also being marketed in catalogs this year.

Daylilies are becoming increasingly popular as "musts" in perennial gardens throughout the United States. Their popularity has grown with such rapidity with gardeners in the southern states that their reception of new varieties determines the final rating in the national hemerocallis symposium—it's a sort of "solid south" bloc in a different field.

Newer varieties in daylilies include those with blooms remaining longer than one day and those that are remontant (i.e. they either continue to bloom for long periods or bloom and rest for some weeks, then bloom again, sometimes until frost.) These are of particular worth to gardeners in areas with long growing seasons. Such a variety, *Evermore,* named for that purpose, has been sent east to the

trial gardens so that visitors, especially other breeders, may determine its worth.

As the evolution of these flowers continues, daylilies are produced that are heavier in texture, larger, of better substance, and many have pronounced ruffled tendencies. *Mona Lisa,* one of Mr. Bechtold's finer introductions, is distinctive for its tailored form and is beautiful in its simplicity.

Besides its increasingly wide range of color, the "hem" is valuable to the perennial border for its good foliage. It has no enemies, will thrive under almost any conditions, and demands little care. Further information on hemerocallis may be found by referring to the September 1954 issue of The Green Thumb.

Among those introductions included in the Botanical Garden Collection not mentioned earlier, are as follows:

Bazaar
Blithe Lady
China Miss
Colorado Gold
Confucious
Desert Sunrise
Denver
Charm Daughter
Distinction
Flame Fagot
Garden Charm
Garden Portrait
Goliath
July Apricot
Liveliness
Mexicana Bandana
Nina Winegar
Pleasant Hours
Red Jacket
Ruffled Spider
Singapore
Streets O' Gold
Stygian
Sunshine Song
Western Smiles

THE RAINBOW GARDEN

By LEE HOUSLEY

THE iris bed, planted August 20th of this year, was designed by Mr. S. R. DeBoer's assistant Mrs. Frances White Movitt for the Botanical Garden. Designed in a rainbow pattern well-suited to the many lovely iris colors, it is located northwest of the museum. Nearly 1000 iris, their catalogue value around $2,000, were put in under the direction of Dr. J. F. Durrance.

Mrs. Alexander Barbour, Mrs. John Evans, and Mrs. James J. Waring contributed financially for the preparation of the beds for the rhizomes and the American Iris Society donated the metal edging for them. All in all it was a project enthusiastically received and magnanimous amounts of time, money, and work were gladly given not only by the members of the Iris Society but also by many other interested individuals who have helped make the Rainbow Iris Beds an oustanding display in the Botanical Garden.

Members of the American Iris Society who contributed plants or assisted in the planting and were helped by Boy Scout Troops 15 and 87 are as follows:

Mr. E. L. Cline
Mr. and Mrs. O. T. Baker
Dr. J. R. Durrance
Mr. and Mrs. Charles Gordon
Dr. Phillip A. Loomis of Colorado Springs
Mr. J. F. Lincoln of Pueblo
Mr. Everett Long of Boulder
Mr. Roy Rogers of Boulder
Mr. LeMoine Bechtold
The late Mrs. Nina Winegar
Mr. W. S. Wood
Mr. J. N. Withers
Mr. Wayne Scott
Dr. Wayne R. Moody
Mrs. James J. Waring
Mr. Don Webber
Mr. and Mrs. Richard Hall
Mr. and Mrs. Howard Housley
Mr. Fred Adams

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OUR CITY BEAUTIFUL

By MISS VIRGINIA SENA, *Parks Planning Department*

DID you know that Denver is one of the best planned and most beautiful cities in America? And, that, in spite of its being located on part of what was once known as The Great American Desert. Perhaps the contrast of semi-arid plains and majestice, barren mountains with tree lined avenues and green, inviting parks is why Denver has been called "The City Beautiful".

Way back in 1868 two gentlemen named Case and Ebert donated 2.44 acres to the city for a park. The populace took a dim view of the project, as the proposed park was out in the "sticks". It is now Curtis Park, bounded by Curtis and Arapahoe Streets and 31st and 32nd Avenues. Thus the Parks System began.

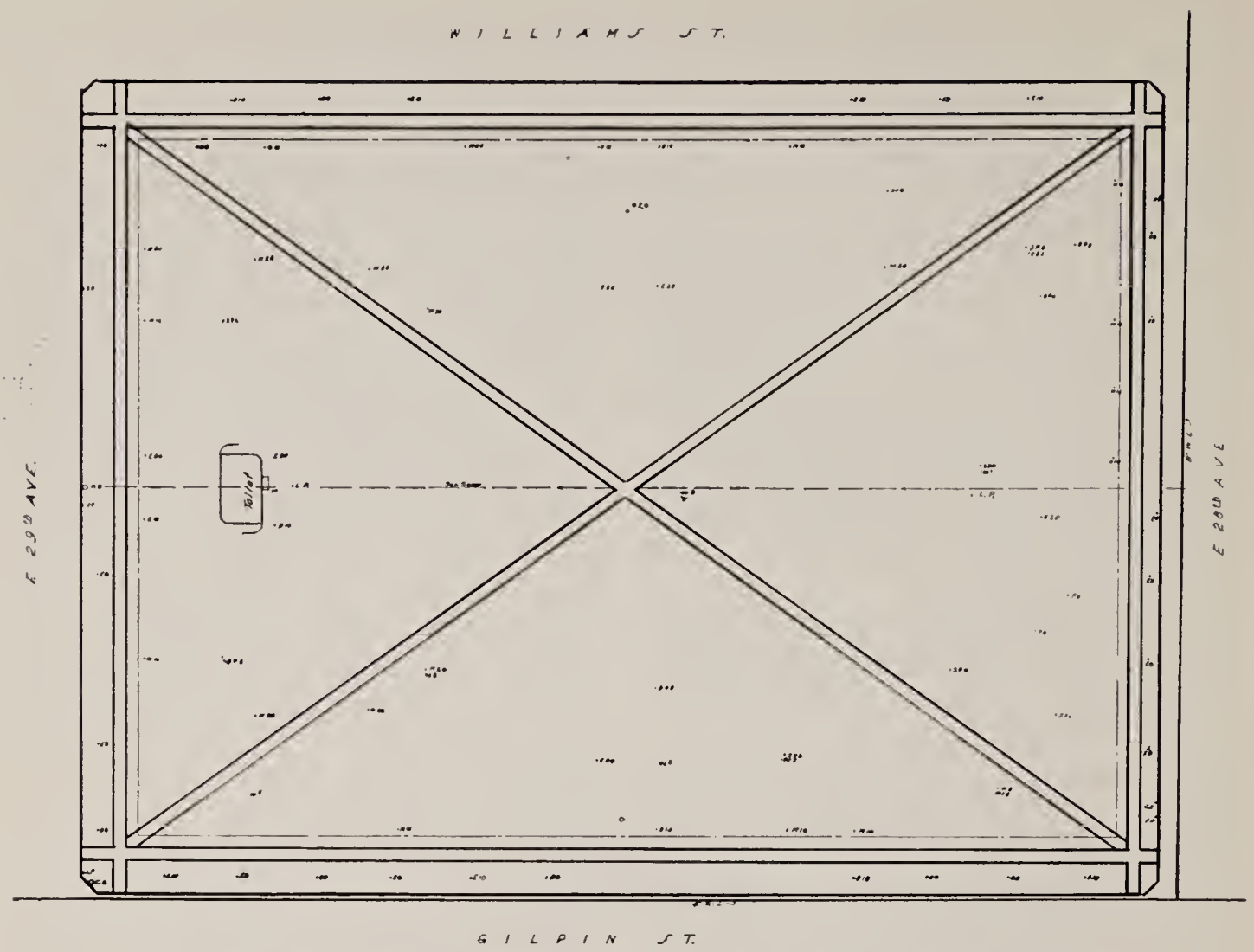
The next park site was donated by Horace Fuller in 1879. Named Fuller Park, it is located at 29th Avenue and Gilpin Street. (On April 17, 1884, the Daily News announced, "with his accustomed annual regularity, ex-Mayor Sopris announces that Fuller Park is beautiful beyond comparison, and the ex-Mayor thinks that, if he can have the use of the city prisoners for a few days, a great improvement can be made in the grading of the place." Apparently he got them.)

So the Park System grew. The 320 acre site of City Park was purchased from the State in 1881—several hundred acres of barren, sun-dried earth, cactus, and sage brush. Our early Park Commissioners and Managers had foresight and ambition. Today, City Park is 128 blocks of rolling lawns, shade trees and lakes in the midst of hard concrete traffic lanes of business.

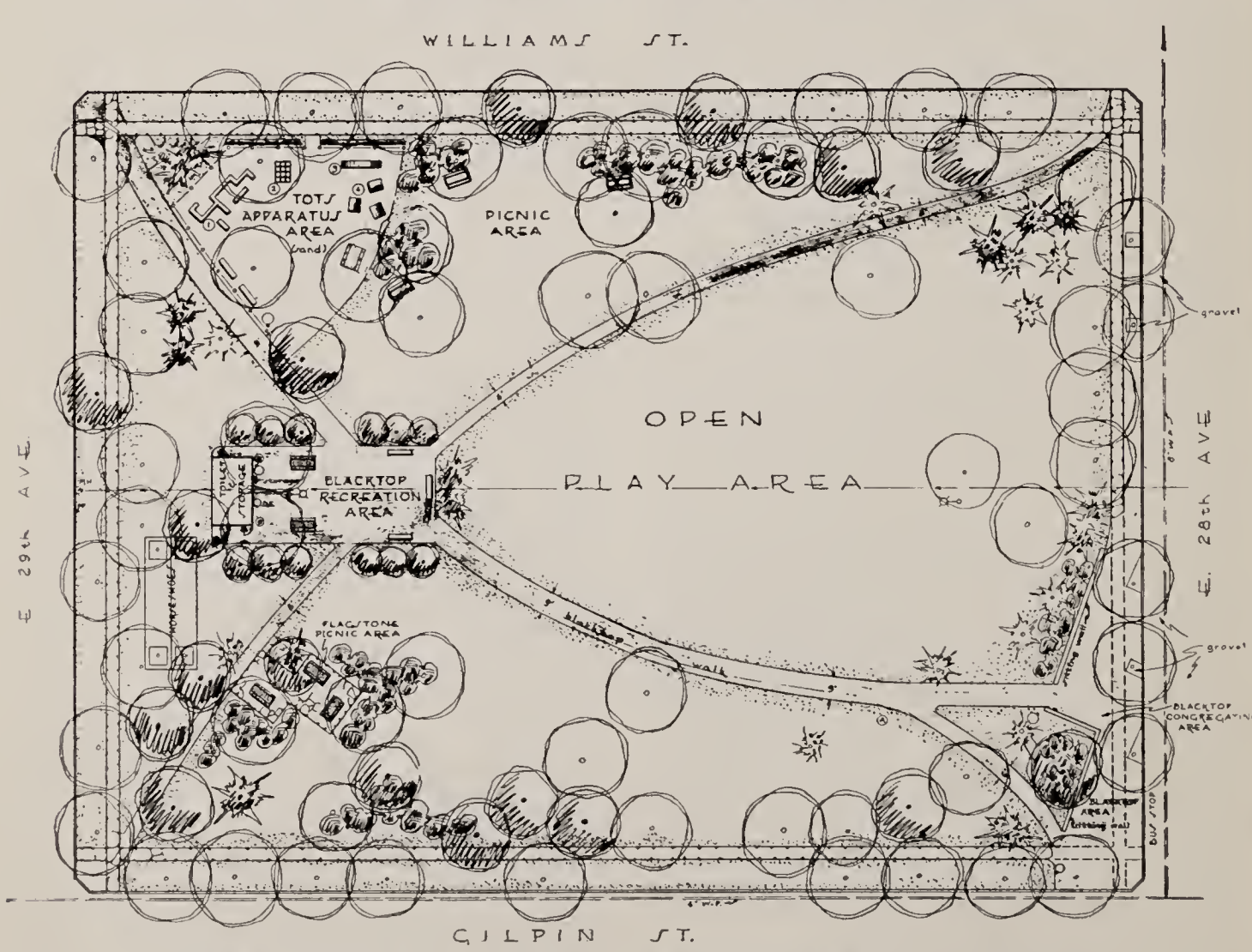
Civic Center, when Robert W. Speer first became Mayor in 1904, was a crowded hodge-podge of warehouses, stores, dwellings, livery stables, and garages. At a cost of nearly two million dollars, the City purchased the thirteen acres lying west of the State Capitol Building and sold the buildings at public auction. The Central Plaza was designed by Frederic McMonnies, the sculptor who wrote in a letter at the time of protests against the Center, that he hoped, "that the citizens of Denver will profit by experience of older cities who are now making up for lost time by extensive improvements at great expense, and will recognize this as being the most vital moment in the history of Denver, and with great courage and foresight lay the foundation of a great city."

With this heritage, we cannot afford to neglect the Denver Parks. According to National Recreation Association standard requirements, Denver rated 50.5% of standard in 1955. Do not be disheartened by this figure as the average city in the United States had only 57% of the standard requirement in a 1949 survey. At that time Denver, with a population of 65,000 less than today, rated 56.4%. Our aim is not an Utopian one. It is an endeavor to supply barest minimums to meet the deficiencies of the present. To understand what this means, let's return to Fuller Park, the second to become part of our park system.

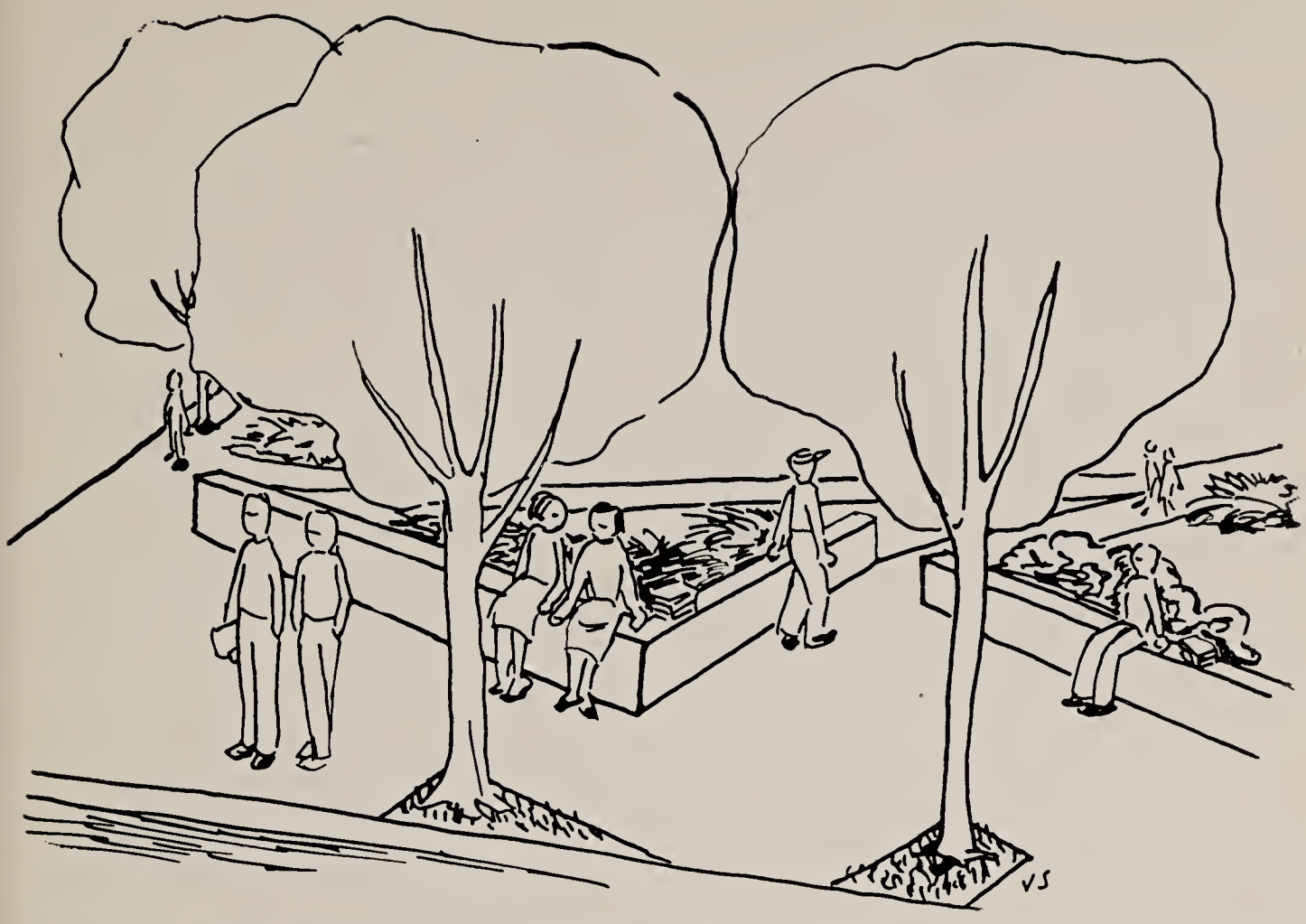
Fuller Park serves an area with 9,000 people. According to our park planning standards (arrived at after comparison of our facilities and needs with national standards), an area the size that Fuller Park serves should contain 17 acres of park. Fuller Park



Faculty map showing Fuller Park as it existed in the spring of 1955



Fuller Park as it will appear when redevelopment is completed



Congregating area and sitting wall to be built across the street from Manual High School

provides only 2.3 acres! The area in consideration is in a very heavily populated, old residential district. No land is available for additional park space. The residents of the area need relaxing and recreational space badly since the yards around the homes are small and crowded.

Since no possibility exists for providing more park space, the 2.3 acres in Fuller Park must be re-developed to provide the maximum usefulness and enjoyment. Manual High across the street provides a playfield for organized recreation for the older children. City park is nearby for activities that require greater space where the whole family can enjoy weekend recreation, league or lawn games, cookouts, boating, or concerts and holiday celebrations. Fuller Park, then, should serve a neighborhood need. Lawns, trees and benches are needed so that housewives may gather and chat. A "tot lot" with slides, swings and other apparatus should be provided for the youngsters.

The first step in any re-development is a field survey of the existing facilities in the block. Survey crews locate the exact position of walks, sewer and water lines, buildings and trees. Using these basic facility maps plus additional information gained from field trips, landscape architects design an improved park plan and civil engineers design a sprinkling system.

The Facility Map, which shows Fuller Park as it exists, reveals two straight diagonal paths criss-crossing the block, a comfort station and a few trees. The path arrangement is practical because the natural pedestrian traffic is diagonal. The paths are being changed slightly to curve pleasingly across the lawn and to allow more open space for play. The

Re-development Plan shows the changes. For obvious economic reasons, the comfort station will not be re-located. Adjacent to it, a black top area will be added for volley ball and tether ball. Picnic tables and additional playground apparatus (northeast corner) are being added. A black top congregating area will be across from Manual High's entrance for the students to use. This area includes some additional background planting, and a low wall for sitting. The existing planting is thin, due to tree and shrub losses over the years, so additional trees and shrub groups for screening will be added.

Denver has 54 existing named parks, most of which require more or less re-development. In addition, the new residential districts must be provided with parks. Some sites have been acquired by annexation and by donations by the developers.

One of our new parks acquired by donation by the developer is 20.9 acres lying along the High Line canal between Dartmouth Avenue, South Colorado Boulevard, and South Dahlia Street. At present the land is barren and the only facilities are back-stops which the neighborhood kids use for baseball. A few cottonwoods grow along the canal bank.

The ground naturally rises from the street on the north side to the bank overlooking the canal. Two outlook points are planned that will make use of the vista across the park. Picnic tables and benches will be at the east end of the park and along the canal. Parking for approximately 100 cars will be provided. Tennis courts, a play lot, and a pool are planned. This is in a new residential area populated almost entirely by young parents and their families.

A sprinkling system is being installed. Tree planting has begun. A basic development plan is followed in all these phases of the work to insure that the park will contain all the needed facilities in a convenient and beautiful arrangement. Thus, the area surrounding this park is assured of its recreation spot for the future. The new suburban development will, in time, be the old, crowded section.

This park will be named "Mamie Eisenhower Park". Our own Denverite First Lady of the land will have good reason to be proud of our newest park.

The Parks Department owns 490 acres of undeveloped land in about 47 unnamed parcels. This new "growing space" will be planted, provided with play facilities, and maintained. We must not lose sight of our heritage. Our well planned park system of the past will be maintained in the future only if we continue to acquire and develop park land. Surely, we cannot allow Denver to become anything less than "The City Beautiful"!

On Thursday, January 12-13, Sears and Roebuck Garden Shop is having an African Violet show. All African Violet growers are welcome to submit entries which must be in before noon of the 12th. Three judges, using Standard African Violet Judging Rules, will pick the winners and the following prizes will be presented:

1. African Violet stand for "best in the show."
2. Large planted planter for the entry with the greatest number of ribbons.
3. Plus 1st, 2nd, 3rd and compensation ribbons in each group. Entries are limited to one per person per group.

FOREST PEST CONTROL MEETING

By FRED R. JOHNSON

SEVENTEEN federal, state and city foresters, entomologists, pathologists, and timber operators, representing the Rocky Mountain Forest Pest Control Council had an interesting meeting at Horticulture House on October 28.

E. A. Snow of the Forest Service reported that 236,000 trees were chemically treated on the Uncompahgre-San Juan forests during the past summer to control the Englemann spruce bark beetle at a cost of $3.31 a tree. In addition 90,000 spruce trees in the infested areas were cut in timber operations. The timber was sold at a low rate ($1.50 per thousand feet log measure) to attract loggers. As a result, 40 saw mills have been installed in the beetle infested area and 71,390,000 feet of timber have been put to profitable use during the past three years.

In fact entomologists believe that if timber cutting can be started soon after a beetle infestation is discovered, the amount spent for chemical treatment of trees can be greatly reduced. However, they point out that in some places logging is difficult or impossible because of the rough terrain or inaccessibility.

A total of $820,000 was spent by the Forest Service in controlling the spruce beetle during the 1955 season. As an optimistic note the entomologists reported that the current infestation is pretty well under control. Since the spruce beetle developed into epidemic proportions in 1939 it is estimated that about four billion feet of spruce timber have been killed in Colorado's national forests. In that time methods of chemical treatment and other controls have been developed so that this insect should not be as destructive in the future.

The group elected Julian Bucher, timber operator of Kremmling, Colorado as chairman and Jos. H. Kay, Forest Service, Denver, as secretary for 1956.

PEEK AT THE MAIL

MR. Charles A. Scott of 1316 East 11th Avenue was formerly state forester and state horticulturist of Kansas. He also was proprietor of the Evergreen Nursery of Manhattan, Kansas and later proprietor of the Prairie Gardens Nursery at McPherson, Kansas. He is now retired, living in Denver, and a loyal subscriber to THE GREEN THUMB. The following is an excerpt from a letter he recently wrote to Mr. Fred Johnson.

". . . Please extend my congratulations to the Editorial Board. It is the finest copy of the the publication I have ever seen. It is printed in good clear type on a high grade paper—a combination that makes it readable. The contents have been edited and well prepared for publication. They express clearly and fully just what the author means to say.

I do not agree with contents of some of the articles any more than I do with all some people say, but I am willing to grant the authors their privilege to express their opinions. May future issues of The Green Thumb be as dignified and as acceptable."

Plan to attend the Twelfth annual banquet to be held February 6. Tickets will be available at Horticulture House after January 10

THE CHICAGO CREEK ROAD

By S. R. DEBOER

OVER the pass near beautiful Echo Lake, bright star of Denver's mountain Parks, you now motor down a 30 foot wide strip of pavement good enough for a city boulevard. It is the last word in road building.

I wish I could continue in this vein, but the fact is, that the construction of this beautiful strip of pavement has destroyed all vegetation on both sides. Sky-high, bare slopes already eroding on the upper side, and precipitous drops on the lower side, are terrible scars on the mountain scene. There is no place to park or picnic except lower down where some muddy and dusty places are left for off-the-road parking.

The old road, lower down along Chicago Creek, thank goodness, is still there. It has only 20 foot width of pavement but it is much more pleasant and attractive.

A few years ago the policy of the National Forest Service was one of painstaking care of the natural scenery. What has become of this policy? Are there no men with landscape training and feeling for these projects? *The Denver region is rapidly filling with people.* We must expect that our natural beauty is apt to be attacked from all sides and, therefore, those of us who realize that Denver's economic welfare is interwoven with the beauty of its region must take a definite stand to see to it that this is not wantonly destroyed. Some of the work which comes under the name of improvement might well be labelled vandalism.

I want to protest to wide and fast traffic boulevards on places meant for quiet enjoyment of the mountain area, and where no through-traffic needs to be accommodated.

I want to protest against the destruction of vegetation and recommend that these areas be restored.

GARDEN NOTES

By HELEN K. FOWLER

You have to believe in happiness
Or happiness never comes,
I know that the bird chirps none the less
When all that he finds is crumbs.

Aye, man's heart could be content
If it saw the joy on the road it went;
The joy is there but you have to believe.

It is a good idea to thoroughly soak shrubs, trees, the lawn, and perennials now in order to reduce winter injury to the plants which continue to give off moisture in winter even though they have no leaves.

Must I water my evergreens in winter as well as summer? Evergreens require LOTS of water both winter and summer. Water thoroughly, soaking them down to the roots. If you have neglected it during the summer, you must not neglect it in late fall.

Winter is rushing on. And now I know why the bird can sing on the darkest day for it believes in spring.

I know a chipper little old lady, well past eighty. Her brother and sister have "gone ahead." "They did not garden to keep them here," she explained.

THE BUILDING OF THE CHICAGO CREEK FOREST HIGHWAY TO MEET PRESENT-DAY NEEDS

By CLYDE E. LEARNED, *Assistant Division Engineer, U. S. Bureau of Public Roads*

THE Chicago Creek road to which Mr. DeBoer refers begins at Echo Lake and extends to the town of Idaho Springs, a distance of 14 miles. The original improved highway between these two points was constructed by the U. S. Bureau of Public Roads during the period 1926 to 1928 with a 20-foot graded width and was topped with an 18-foot-wide bituminous wearing surface in 1936. The writer was the supervising engineer in charge of the design and construction, and following completion of construction, planned and supervised the maintenance and betterment's operations for a number of years.

Prior to 1926 there was a very narrow one-way road over the seven miles between Idaho Springs and the confluence of East and West Chicago Creeks. The remaining seven-mile section to Echo Lake was an old logging road which passed through the Moscript Sawmill site and consisted of two rutted wheel tracks with grades in excess of 20 percent, over which there was practically no travel.

The recent improvement of the Chicago Creek road to which Mr. DeBoer objects was necessary inasmuch as the old road was designed and constructed for another era and was inadequate to cope with the increased travel imposed by the rapidly increasing population of the Denver metropolitan area. Further, the Chicago Creek road, in conjunction with the adjacent approach highway from Bergen Park to Squaw Pass and Echo Lake is an important link in what is probably the most popular tourist and recreational one-day trip out of Denver. At Echo Lake a junction is made with the scenic and awe-inspiring road to picturesque and rugged Mount Evans.

Data from official U. S. Census compilations and figures taken from the excellent report on the "Denver Metropolitan Area" prepared by the Denver Planning Office in 1952, indicate that the population of the metropolitan area of Denver between 1930, the time of the completion of the original construction of the Chicago Creek road, and 1955, has doubled. During this same period the rate of increase of motor vehicle registrations has greatly exceeded the rate of increase of population. Another factor necessary to consider is that the average motorist now travels many more miles annually than he did in 1930. By combining the effect of all three of the above factors, namely, population increase, registration increase per capita, and driver's average mileage increase, it has been determined that in 1955, the highways in and around metropolitan Denver are traveled about four and one-half times as much as in 1930. There is not much question that actual traffic counts will verify these figures when construction is completed on the wider and more serviceable highway between Echo Lake and Idaho Springs.

In explanation, forest highway funds are provided by the Federal Government, and during recent years

about 1¾ million dollars annually has been allotted to Colorado for construction. The programing of these funds is the joint responsibility of the Colorado Highway Department, the U. S. Forest Service, and the U. S. Bureau of Public Roads. The Bureau of Public Roads is responsible for handling these forest highway funds which are expended on a designated system of forest highways.

To clarify the picture as to class of roads, the Forest Service has a separate setup of funds for expenditure on the Forest Development System. These roads and trails are used primarily in connection with the development and administration of the National Forests and are constructed on a much lower standard than are forest highways.

In the construction of National Forest and National Park highways over the years, I believe this is the first time that the U. S. Bureau of Public Roads has been accused of vandalism. The Bureau of Public Roads has, since its inception, been a leader in high-type mountain road construction and a special effort has always been made to protect and preserve the adjacent terrain and vegetation; and when scars were created, every reasonable effort was made to restore the ground to its natural state, and in many instances to a much improved condition over the original state.

If there are any practicable methods which road-builders could follow to build new and wider and safer highways in mountainous regions for the increased traffic without cutting into the mountain slopes and without creating construction scars, it is certain that all road-building agencies, such as the State highway departments, the U. S. Forest Service, and the U. S. Bureau of Public Roads, would be very happy to adopt such methods even though it might mean the expenditure of a reasonable amount of additional cash.



Stripping sod from an area which is to be covered by a highway fill. The sod is later used for covering cut slopes.

It is suggested that Mr. DeBoer interview the people of Boulder and vicinity to ascertain what they think of the Bureau's construction, restoration work, roadside improvement, and camp-ground development activities on the Boulder Canyon Forest highway between Boulder and Nederland. This highway, incidentally, was constructed for the most part across patented lands where it was necessary for Boulder County and the Colorado State Highway Department to acquire the highway rights-of-way. It also might be enlightening to discuss with

Grand County and Jackson County folks their opinion of similar work performed on the 33 miles of the Willow Creek Forest highway between Granby Junction and the settlement of Rand in North Park.

The highway between Squaw Pass and Echo Lake, which is adjacent to the Chicago Creek road, was completed by the Bureau through the bituminous base stabilization stage in 1952. This highway also replaced an old narrow 20-foot road which was built by the Bureau in 1920 and 1921. It is believed that an inspection of this new road would reveal that many of the construction scars of 1951 and 1952 have been healed by nature or have been eliminated by the maintenance forces of the Bureau during the past three years. People familiar with the old and the new roads between Squaw Pass and Echo Lake appreciate the fact that the new highway has many more parking areas and some excellent camp-ground facilities —items which were practically nonexistent on the old road.

It might be mentioned also that during the year 1954 the writer invited the members of the Roadside Committee of the Colorado Forestry and Horticulture Association to inspect both the Boulder Canyon and the Echo Lake-Squaw Pass Forest highways. They were pleased and enthusiastic regarding the landscaping, roadside improvement and campground development work performed by the Bureau on these projects. It should also be pointed out that it is now the practice to obtain where possible, the right-of-way to the center of the stream when a new highway is constructed more or less parallel to a stream. This is so the public will have an area in which to park and camp and to utilize the campground facilities. Portions of many of the Forest highways constructed by the Bureau of Public Roads, including lower Chicago Creek, Boulder Canyon, and South St. Vrain, are for the most part across patented ground, and it is necessary for the State Highway department and the



Drinking fountain on the Chicago Creek project built by the Bureau of Public Roads' forces

counties to expend large sums of money to purchase these private lands, in order to have them available for the public.

The first reconstructed section of the Chicago Creek project has been completed only recently to the contract grading stage, and naturally there are many construction scars in evidence. Following regular Bureau of Public Roads' policy, landscaping, roadside improvement, and campground development work will be performed, and in a few years it is questionable whether there will be many unsightly or conspicuous scars remaining. This activity will include right-of-way cleanup, seeding, topsoiling, planting of shrubs and trees, thinning of trees for vistas, installation of safety features, such as attractive masonry guard walls, building of parking areas and erosion-control devices, and providing campground facilities. The last item will include construction of concrete table and bench units, fireplaces, development of potable water supplies, building of runoffs from the highway to the camp grounds, and cleanup adjacent to the camp ground to protect the area from fire. The U. S. Forest Service, on the Echo Lake-Squaw Pass Chicago Creek, and South St. Vrain Forest highway projects, has agreed to provide and maintain the campground toilets.

The new Chicago Creek highway will be wide enough so automobiles can safely park on the shoulders, and the area provided for parking will be at least five times that which existed along the old Chicago Creek road.

The State highway departments and the U. S. Bureau of Public Roads organization realize that the peak of highway development has not been reached. It is also appreciated that improvement of highways will not cease in the near future, and generations of the future will doubtless object to the standards presently used. Rather, it is assumed that those who follow will continue to improve highways to meet the accelerated traffic demands of the future.

In the building of a new house, landscape architects realize that it takes a year or two following completion of the house proper to put in the lawn, shrubbery, trees, plants, and seeds, to establish a good ground cover, and have the plants in bloom. The same more or less applies to the construction of a highway.

It is again reiterated that the practice of most road-building agencies is to conserve, where feasible, the natural beauty that exists along the highway, and to encourage the use of the highway for educational and recreational purpose for as many people as possible.

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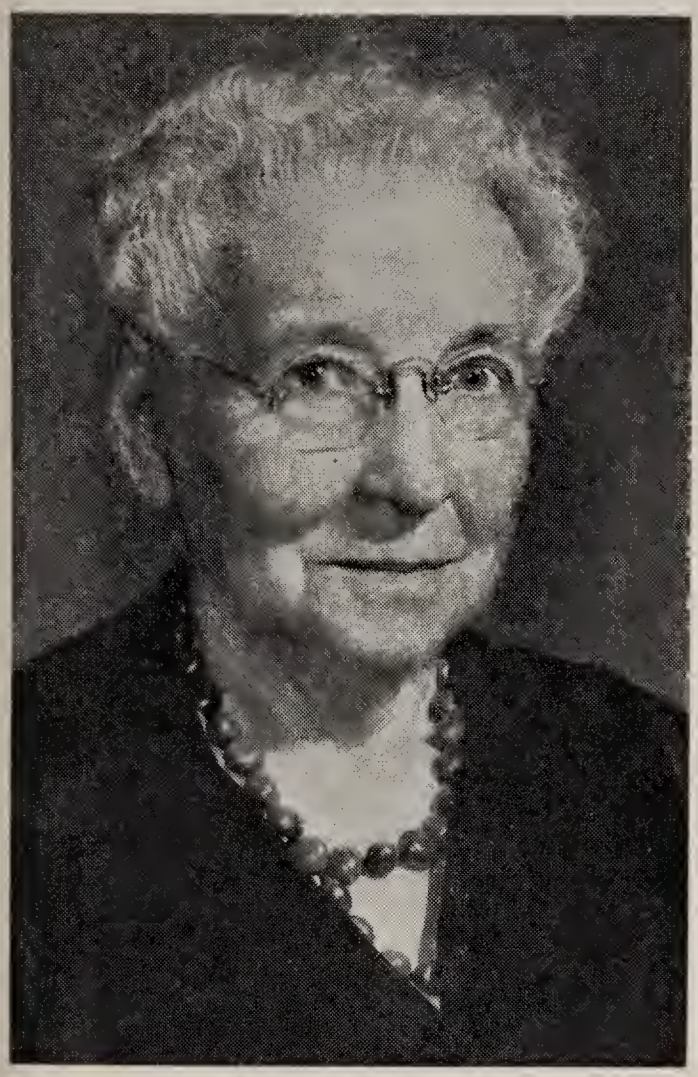
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TRIBUTE TO MRS. LISBETH G. FISH

By M. WALTER PESMAN



The late Mrs. Lisbeth Fish

WHEN the history of Colorado gardening is written, — as it should be some day,—the activities of Mrs. Lisbeth G. Fish will be especially evident all through the period between 1925 and 1950. Her name appears again and again in the newspapers in various capacities.

It was the time when garden clubs suddenly sprouted up all over the country. Mrs. A. G. Fish, who had come to the Denver region around 1913, saw the need and possibilities of these clubs.

Nobody had her vision or the organizing talent that she displayed in helping garden clubs individually at first, and later through the Colorado Federation of Garden Clubs. The latter was organized and incorporated on November 4, 1937, mainly through her efforts, (assisted by Mrs. Clarence M. Richards, another able gardener of the time). It is still a main force in the State.

The Home Garden Club of Denver, organized February 26, 1925 was her first important center of activities. Many of its most valuable objectives were initiated under her leadership.

Later her special garden club ideals were transferred to the Civic Garden Club, also organized by her. Through her drive and personal example garden club members became the most active leaders in garden movements of the period. She gave untintingly of herself, and in return exacted help from her associates.

One of her many channels of publicity in gardening matters was the Garden Quarterly which she started and on which she served as Editor. It is the publication of the Colorado Federation of Garden Clubs and it was started around 1934.

As a result of her regional garden achievements she was made vice president of the National Council of State Garden Clubs. In all these organizations she was a real force. Distance and dangerous highways could not deter her from attending the many functions of garden clubs.

Mrs. Grace Moore Lippard, another Past State President of the Colorado Federation of Garden Clubs, to whom we are indebted for some of this information, says that Lisbeth Fish came through with club engagements even if it meant traveling over snowy mountain passes, which would deter even traveling salesmen. "Such was her devotion to spreading the joys of gardening".

The Garden Library at the Garden Center, another one of her dreams come true, was started with a donation of several hundred of her own books, and increased by many other horticultural books, bought by her. It is indicative of her generosity in many ways.

Naturally, this tribute only covers one aspect of her many, many interests. Many of us know about her poetry, her work with the Parent Teacher Association, her Colorado Federation of Woman's Clubs, (500 trees were planted in her honor in reforestation work of the Federation), her activities in the Denver Woman's Press Club, — just to mention a few. We can only marvel at the unbounded energy, and enthusiasm with which she accomplished so much in her life.

Her name is indelibly written in many pioneering ventures. In horticulture and gardening it would be impossible to dissociate her personality from the entire development of the Rocky Mountain Garden Region. Garden Shows, and Garden Contests would invariably find her in their midst. Her own homegrounds, the Seven Elms, was often a gathering place of garden lovers. Let us think of her as a brilliant personality, who has shared her knowledge with many others, and who trained others to carry on in her steps. She left her mark.

In conclusion, let me again quote Mrs. Lippard in typifying Mrs. Fish's attitude toward life:

Look up, not down
Look forward, not back,
Look out, not in,
Lend a hand.
(E. Everett Hale)

The 11th annual meeting of the Midwestern Chapter of the National Shade Tree Conference will be held February 22-23-24, 1956, in the La-Salle Hotel, Chicago, Illinois. The purpose of the organization is to encourage the planting of more trees and ornamental shrubs, to raise the standards of tree care practices by dissemination of knowledge gained through laboratory research and field work and to promote more friendly cooperation among those engaged in arboriculture. Membership is composed of commercial arborists, city foresters, park personnel, nurserymen, educators, research scientists and others interested in the propagation and care of trees and shrubs.

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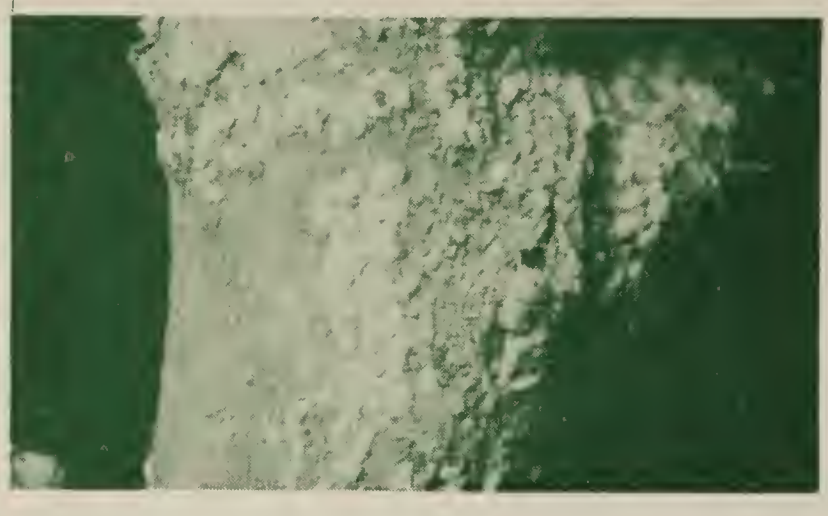
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The Green Thumb

Vol. 13 FEBRUARY, 1956 No. 2

CALENDAR OF EVENTS

Feb. 4 — Central District Junior Workshop, first Saturday of every month 10:00 a.m., Garden Center, W. Alameda Ave. and Kalamath St. Free to all children. Mrs. Delbert Faust, Chairman.

Feb. 5-6—"Stepping Stones to Australia" Alfred M. Bailey. Lecture program. Denver Museum of Natural History. Sunday program 2:30 and 4:30 p.m. Monday program 6:30 and 8:30 p.m.

Feb. 6—Annual meeting of the Colorado Forestry and Horticulture Association. 6:30 p.m. Denver Chamber of Commerce, 1301 Welton St. Dinner tickets $2.50 each, including tax and tip.

Feb. 6—"Fun with Flowers," First Monday of every month, Garden Center, W. Alameda Ave. and Kalamath Street, 10:00 a.m. Mrs. Wm. R. Rutschman, Chairman.

Feb. 8—The Organic Garden Club meets the second Wednesday of every month, 8:00 p.m. Horticulture House.

Feb. 11 — Northern District Junior Workshop, second Saturday of each month, 10:00 a.m., Boulder, Colorado. Mrs. W. C. Sullivan, Chairman.

Feb. 12-13 — "Romantic Spain and Morocco." Robert F. Barnard, Lecture program, Denver Museum of Natural History. Sunday Program 2:30 and 4:30 p.m. Monday Program 6:30 and 8:30 p.m.

Feb. 13—Botany Club meets second Monday of every month 7:30 p.m. Horticulture House.

Feb. 13—A Horticultural Workshop, 10:00 to 11:30 a.m. Garden Center, W. Alameda Ave. and Kalamath St. A panel of experts will answer questions. Mrs. Leon Lippard, Chairman.

Feb. 19-20—"North to The Yukon." Cleveland P. Grant, Lecture program, Denver Museum of Natural History. Sunday 2:30 and 4:30 p.m. Monday program, 6:30 and 8:30 p.m.

Feb. 16-17—Short Course for Nurserymen and Arborists, Colo. A & M College, Ft. Collins, Colorado.

Feb. 21—Nature on the Screen Series. "American Birds and Big Game", Cleveland P. Grant. Denver Museum of Natural History 8:00 p.m.

Feb. 26-27—"The Soul of Mexico", Romain Wilhelmsen, Denver Museum of Natural History. Sunday program 2:30 and 4:30 p.m. Monday program 6:30 and 8:30 p.m.

Green Thumb Program, 9:00 a.m. every Saturday, KLZ, 560 on your Radio Dial, Pat Gallavan, Horticulturist, with Bill Jones.

PATRICK J. GALLAVAN.....*Editor* MRS. HELEN FOWLER.....*Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. GILBERT SAUER, *Custodians*

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION
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1355 Bannock Street • Denver 4, Colorado • TAbor 5-3410

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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Secretary-Treasurer.....Mrs. Ruth E. Sauer
Editor.....Patrick J. Gallavan

ANNUAL BANQUET

The 13th annual banquet of the Colorado Forestry and Horticulture Association will be held Monday, February 6th, at 6:30 p.m., in the Chamber of Commerce Building, 13th and Welton Streets. Since it is the most important meeting of the year for members of the Association, we urge you to attend. It is important to you because it gives you the opportunity to see many of your old gardening friends and to make friends with news ones. You will also meet the officers and committees who will guide our organization through another year. The goals for the coming year will be set and a report of our successful past year will be given. In essence it gives you the opportunity to know your association. A light, entertaining program has been planned for your enjoyment. Plan to attend, won't you?

Of particular note in this issue are several fine articles on evergreens. We are stressing them because we want each publication of our magazine to carry timely and informative subjects. We feel these articles to be particularly appropriate now for at this time of the year it is especially easy to see the magnificent job evergreens do in creating warmth in the winter landscape scene.

Co-featured with the evergreens are the All-America Plant Selections. They are called to your attention at this early date to enable those of you who are interested in growing them in your garden to secure seed from your local seed stores before the limited supply of new introductions is sold.

The nurserymen and arborists of Colorado will hold their annual Short Course at Fort Collins, February 16th and 17th. Registration begins at 9:30 a.m., Thursday the 16th.

This will mark the first time that their effors have been combined and it looks like their program will be a good one. The following subjects are to be covered: Chlorosis, tree and shrub fertilization, insects and diseases, new varieties of plants, safety in trees, merchandising, and other related topics.

Congratulations to our fellow member, Samuel B. Detwiler of Boulder, who is one of nine persons elected recently as a *Fellow* of the Society of American Foresters. It was conferred in recognition of his work in forestry, soil conservation, and hillculture research.



ARRANGEMENT OF THE MONTH

THIS symmetric-triangular, buffet arrangement of sanseviera, hen and chickens and carnations is as versatile as it is striking. Here yellow carnations were used to blend with the yellow edge of the sanserviera and with the brass container, but almost any yellow flower will do. Yellow roses, for instance, would make a lovely change. To create a rounded arrangement for a dinner table, add a half dozen more carnations. For versatility and lasting quality, the flowers may be removed or left out all together, using just the sanseviera and hen and chickens which will stay fresh for weeks.

Picture and arrangement by Mr. and Mrs. Ray Turnure.

EVERGREENS FOR HOME PLANTING

By M. WALTER PESMAN

WHEN we talk of evergreens in Colorado, we do not generally think of rhododendrons, holly, kalmia and camellia, and other broadleaved evergreens. The reason is simple: they do not thrive here—with very few exceptions.

The only broadleaved evergreens we *can* grow, are such evergreen vines as English ivy and Euonymus radicans — groundcovers like periwinkle (Vinca minor) and kinnikinnick (Arctostaphylos uva-ursi) — and a very few shrubs like Oregon Grape (Mahonia aquifolia) and Euonymus patens. Both shrubs are practically hardy here, especially on the east and north sides of the house. Both should be used more extensively: they give character to foundation plantings that cannot be achieved in any other way.

English privet is trying hard to be a broadleaved evergreen: in certain protected places the old leaves stay on all winter and keep green until the new spring leaves appear. With a little selecting of this particular type we may well develop an evergreen strain. Here is a chance for you plant breeders, both amateurs and nurserymen, to create a worth while novelty. (Incidentally, the same thing may be done in developing a race of other broadleaved evergreens that can stand this climate and can stand non-acid soil.)

Now let us come back to our "own" evergreens, usually called "conifers." If we are occasionally jealous of other climes where rhododendrons and holly grow, let us take pride in the plants that we can grow to perfection. Our conifers are the envy of many gardeners in other regions. How many times have people in Washington, D. C., begged us to send them "just a little Colorado Blue Spruce, please."

Knowing how easy it is to grow most of our conifers, what a pity that we don't get the best effects from them. Doesn't your memory immediately bring to mind homes that are simply swathed in masses of shrub evergreens? They seem to be suspended in them, and have a most funereal atmosphere. And as the Pfitzer junipers or Mugho pines shoot up higher than the original intention, the house gets smaller and smaller in proportion! Talk about a home being "dated"; the overgrown evergreens will tell just how long ago it was landscaped.

The solution is not too difficult. Even if the shrubs have gotten out of hand, it is possible to bring them down by gradual and judicious trimming. Get a man who knows his evergreen maintenance!

A few deciduous shrubs interspersed with these "low" conifers will take away the funereal look and will give a most welcome flowering effect in spring or summer. Even the winter aspect may be improved by such colored wood as provided by red-twig shrub roses or dogwoods. A forsythia among or against evergreens is a sight well worth waiting for—as you may *have* to in odd years. Other good shrubs to intersperse with evergreens are Flowering Almond, Spirea arguta, Japanese barberry, Blue Mist Spirea, Potentilla, Low Ninebark, Euonymus alata (for fall effect) and even Coral berry in shady places. A few free-blooming roses may give a thrill in midsummer, as seen against evergreens.

For varieties of low evergreens to use, see the other articles in this number. Try a few new ones occasionally.



A "cute" pair of evergreens at the doorway soon make you squeeze through.

Half way between the taller trees, such as pine and spruce e.g. and the shrub conifers, are the upright junipers. Again, what sins we have committed against them! A "cute" pair of "scops" at the doorway soon get so large that you have to squeeze your way in. The scale of the picture is quite distorted. In general there is nothing to do but to rip them out, once they get too large.

Often the best place for Juniperus scopulorum, the upright "cedar" so called, is at the corner of the house, preferably in groups of three or more, provided the house is large enough. Again, a few contrasting deciduous shrubs will help the effect. Where you don't want the definitely vertical effect, you might prefer such types as



A single Blue Spruce seems to shout at us: "Look at me, look at me!"

Canaerti Juniper. And an overgrown Mugho Pine is quite acceptable in odd corners or as a sort of "frame" for the small home. Try it.

Pines, spruces, and firs are the difficult evergreens to use in the small modern home: most of them grow to such large size! The one exception is our Pinyon Pine, native in the south part of the state and shipped in by the hundreds from Walsenburg and its general neighborhood. (Are we in danger of depleting the natural growth of pinyons?) They can be used freely with almost any type of horizontal home. Eighteen feet is the usual maximum height.

On the other hand, Blue Spruce is the most difficult one to use effectively. A single blue spruce seems to shout at us: "Look at me, look at me." You do, and overlook the rest of the landscaping. A *group* of spruces is more modest in its appeal, especially if it contains a variety of sizes. But, of course, eventually, they'll be of enormous height, as are Ponderosa Pine, Douglas Fir, and other pines and spruces (with few exceptions). They are definitely background trees, and very good ones.

Let us wind up this story of conifers as we began, by emphasizing the beauty of variety. By all means let us have some evergreens in our home planting, for winter effect: they take away the bleak feel. A spot of evergreen foliage here and there is most appealing. Better yet, a large spot here and smaller "repeats" there and yonder. Let there be balance in the rear garden and in the front picture.

Then let us select the deciduous trees and shrubs with the possibility of contrast and the two types will enhance each other's beauty.

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Plant **MORE**

EVERGREENS

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EVERGREENS

By SCOTT WILMORE

EVERGREENS represent a very large family and therefore one can only deal in generalities in so short an article covering such a wide and interesting subject. Frankly, they are my hobby, and a good part of my life's work, if you will. And strange as it may seem, they come far ahead of dahlias made famous by my father, W. W. Wilmore, even though all of my earlier life was spent working with him in that field.

Evergreens are indispensable in landscaping, and in my opinion no residential or commercial planting is complete without them. Not only are they beautiful in the growing season or summer period, but they are equally, and in many instances more beautiful, in the winter months.

What would our city parks and recreation centers look like without evergreens to contrast with the deciduous trees, shrubs, and flowers? In the winter months, with or without snow, the conifer family stands out in our parks and in other public places in sharp contrast to deciduous trees and shrubs. And what about foundation plantings around the home? Or the use of tall evergreens for backgrounds or as lawn specimens? I cannot stress too strongly the use of conifers in practically all types of plantings.

Now it is equally true that evergreens can be overdone. Too frequently, especially in foundation plantings, the various types of spreading junipers seem to be jammed up against the wall, their interlocked branches giving a mass planting effect entirely unnatural and unjustified to the proper use of evergreens. Then, there comes a time, due to the natural growth of trees, when they outgrow their position and use—when part, if not all of them, have to be removed from foundation plantings and replaced by younger evergreens. Consequently, great care should be given to proper placement at the start in order to get the most out of them and to avoid crowding as long as possible. Landscaping, whether with or without evergreens, can be compared somewhat to decorating various rooms in a house. There comes a time for renewing wall paper, painting, and making other renovations that are necessary in a well-kept home. Again, landscaping is no different. Due to healthy growth, evergreens can and do outgrow their positions if given enough time, and then changes have to be made.

Probably the most overlooked evergreens that should be in every planting are the long needled pines. Why more of them are not used, I cannot say. Possibly it's because they have not been recommended by those making their livelihood from their chosen profession. From my personal standpoint, I feel that with rare exceptions, they should be in every planting. To me they are every bit as majestic as our Colorado blue spruce which are so much in demand throughout the North American continent. Use more of these long needled pine! They are fast growers as a family, are easy to care for, and have a minimum amount of insect problems. A word of caution, however. Avoid over use of water and planting them in low places where water might accumulate, for they enjoy "dry feet." And speaking of pines, in my opinion, one of the most outstanding varieties is the Swiss Stone pine (Pinus cembra). This is a

little beauty and admired by all who see it. It is a very slow grower, but not dwarf, for it eventually will reach the height of most any other pine—but how many years to do it? In this area, it rarely if ever, grows more than six inches a year. It is somewhat inclined to be on the chlorotic side, and consequently should be checked occasionally for symptoms of chlorosis and treated for same. Or better yet, keep it happy by fertilizing it from time to time on the theory that "an ounce of prevention is worth a pound of cure."

In closing, and as stated at the start, the evergreen field is too large to cover in so short an article, but I do love them, and to me their beauty is unsurpassed and impossible to find a substitute for, either in landscaping or in Nature itself.

HARDY BROADLEAF EVERGREENS FOR COLORADO

By KEN WILMORE *of Green Bowers*

DURING the past few years, broadleaf evergreens have come into their own as standard items for landscaping. Through much experimentation local nurserymen have been able to gather information on many varieties and can supply them to the public at this time.

Until recently it was believed that broadleaf evergreens needed shade from the summer sun to prevent winterkill, but this is not necessarily true. For example, we planted some Mahonia aquifolium on the South side of a large shopping center building. Not only did they hold their leaves well all winter, but they put on much more than average growth through the summer. This leads us to believe that most of the winter damage of nursery stock comes from the dry north winter winds instead of our warm winter sun. We had previously recommended that people plant Mahonia on the East or North, but through this experiment we have proved the theory false.

The following is a list of broadleaf evergreens most commonly used by local nurserymen and most readily available to the public.

Mahonia Aquifolium, commonly called Oregon Grape or Grape Holly is the most widely used. This beautiful plant has actually been used in this area for many years, but only in recent years has come into its own. This shrub will attain a height of 4 or 5 feet. It has deep, glossy, dark green, holly-like foliage, and clusters of bright yellow flowers in the spring, followed by blue grape-like berries that are fairly palatable when ripe. The new growth is generally light green and often will turn to several shades of red in the fall and winter. In the winter months, one can find almost every shade of red and green in the foliage.

A smaller brother of the Mahonia aquifolium is also available. It is called Mahonia aquifolium compacta. It seldom attains a height of over 2½ ft. but bears the same description except for having smaller leaves and a more compact habit of growth.

Next is the Euonymus patens or Spreading Euonymus. This beautiful shrub will grow to approximately 4 feet. The foliage is a rich glossy dark green, somewhat resembling that of gardenia. When protected from the wind the foliage will generally hold all winter. Sometimes Euonymus patens will defoliate under extreme



Oregon Grape, Mahonia aquifolium.

weather conditions only to bud out again in the spring with rich succulent growth. Defoliation apparently does not hurt this plant because of the remarkable recovery it makes in the spring.

Several vining types of Euonymus are most satisfactory for both ground cover and vine use. Among these are Radicans, Raticans colorata, and Vegetus. These varieties are identified principally by the size and color of the leaves. Only the Radicans is self-clinging.

While we are talking about evergreen vinces let's not forget "old re-

liable," English Ivy, which is most satisfactory. Also remember that Myrtle or Vinca is probably the most satisfactory of all evergreen ground covers and its diversified use makes it a must in every garden.

Last on our list is the Yucca. Better known varieties are Macrocarpa, Whipplei, Filamentosa, and Glauca. Yucca will give striking effect to nearly every landscape design adding a true western flavor that nothing else can do as well. The afore-mentioned varieties give a wide selection to the gardener. Some have wide leaves, some narrow. Some grow tall, some short. One can find a yucca to fill any need and it is as hardy as any plant known.

A liberal amount of peat moss should be used in planting most of the broadleafs and like most other plants they like some watering occasionally through the winter.

The broadleaf evergreens add that little something different to any yard in which they are used. Maybe in a few more years we can add to the list of satisfactory broadleaf evergreens. In any event we shall always keep trying.

A SQUIRRELY ENTERPRISE

By DOROTHY GOULD

MORE honest occupations exist than stealing from squirrels. But if you can take the word of Harry Swift of Wheat Ridge, few are more fun.

What's more, Swift and his family have turned it into a tidy profit—perfectly legal so long as squirrels don't acquire civil rights!

Swift is a wholly respectable member of society as is attested by his major occupation as regional field assistant for the bureau of census at the Denver federal center. His robbery of the squirrels—nothing serious, he contends—is the collection of tree seeds from squirrel caches throughout Colorado.

What began as a hobby has broadened into an occupation taking up much of the time of Swift, his wife Pauly, and their three children, who have leased five acres near their home on which to plant trees from seed, and raise seedlings for direct sale to the public.

Apparently the Swifts are the only nursery folk doing this in Colorado, for although experimental stations also raise seedlings, they are not for sale to the public at large.

"We leave plenty of food for the squirrels," Swift hastens to explain. All squirrels store more cones than they ever use. Some of the caches found under big trees or in groves are decades old and long forgotten by their original furry owners. Sometimes as much as 10 bushels of cones are found buried in bits of pine cones, scales, and needles, which are collectively called "duff."

These are what Swift needs in his work, for usually the cones seen on pine trees have shed their seeds, to float off at large. But instinct tells squirrels when to collect the cones for eating and storing, when they are neither too green nor too ripe. Two or three varieties often are found in a single cache—fir cones preferred, as Mr. Squirrel finds these the easiest to open and de-seed, where lodgepole cones are tough. You'll find the lodgepole where fire has swept away all else.

The Swifts planted 2,000,000 seeds last spring and these included blue



A few of the many shaded seed beds at the Swift Nursery.



Two-year-old pinyon pines still under the protection of lath.

spruce, Engelmann spruce, ponderosa, pinon, bristlecone, limber and lodgepole pines, Douglas fir, corkbark, Alpine and white firs, and native junipers. Swift has also tried European larch, Austrian and Eastern white pines hoping that even non-native trees may progress in Colorado if started from seed. Seeds, incidentally, run 130,000 to the pound for Engelmann's spruce, 90,000 for blue spruce, 3,500 for limber pine and 15,000 for white fir.

Procedure is first to rob the squirrels (sometimes even picking up cones tossed down by an indignant animal scolding high above), then to spread them out to dry at the Swift home. After one to three weeks, they are put in cylinders, rattled around to dislodge the seeds, and finally the seeds are put in a fanning mill to winnow them completely, after which they are scattered on the planting area and lightly covered with sand.



Two-year-old ponderosa pine seedling in the open field.

Hot sun comes down sometimes even in Colorado, so a lath frame helps give protection against it. Hand watering is frequent. During the first year, blue spruce should grow an inch, ponderosa, bristlecone and limber two inches, and juniper two to four inches. Second-year watering can be less frequent but must be more thorough. After two years the seedlings are transplanted to a field and set out six inches apart in rows. As a four-man crew, the Swift family can plant 10,000 or more seedlings daily. Mrs. Swift heads weeding crews of school children during the summer, who pull weeds out by hand as they pass up and down rows.

The final market includes eastern Christmas tree growers, and Colorado farmers and ranchers. Douglas fir from the northwest doesn't flourish in New England's winter cold, Easterners have found. Here in Colorado the seedlings are planted for windbreaks. Christmas tree growing may finally be developed in this area (trees farther north are often cut only to be snowed in and kept from market) and Swift is experimenting with "canned" trees which may be sold both to the public and to local nurserymen.



Beautiful clusters of Niagara grapes reward Mr. Keul for his labor in his vineyard.

BACCHUS' DELIGHT OR HOW TO GROW GRAPES IN COLORADO

By MELANIE BROWN

Mr. Martin R. Keul, well-known around Denver for his outstanding success in grape culture and other small fruits and vegetables, generously gave of his time and knowledge so that we could write this article in answer to the many phone calls asking for information concerning pruning and general grape culture. The above article was gleaned from his concisely worded outline and from his many pamphlets and other notes. For further information or practical demonstration Mr. Keul welcomes you to call on him or to come visit his garden.

BECAUSE the grape is such a useful and satisfying plant and fruit, it's a delightful addition to any garden. All it requires is a sunny, relatively protected location where it can be trained on a fence, porch, trellis, summer house, or regular arbor. When properly trained and pruned, grape vines are as attractive and useful as any ornamental vine, and if planted and tended correctly, will last for decades.

However, it is of utmost importance to select varieties that are best suited to this region—plants whose fruit can mature in our short season and plants which are resistant to chlorosis. This last point is especially important, for

otherwise the vine will not produce satisfactory growth.

The varieties of grape recommended for this region by Martin Keul, who has been growing grapes for some 50 years out here, are divided into three color groups—white, red, and blue. Of the white varieties, Mr. Keul recommends *Seneca, Portland,* and *Niagara.*

Seneca is the earliest of these three. It is a vigorous vine, hardy and productive with self-fertile flowers. The berries are yellow and medium in size The fruit adheres well to the vine and is sweet with mild acidity and has a very fine aromatic vinous flavor which makes it an excellent dessert grape.

The *Portland* grape had its origin in New York state in 1901. It too is a vigorous, hardy vine with self-fertile flowers. Its berries are green to amber with pulp that is firm, sweet, and juicy with low acidity. This is also a fine dessert grape for home and market.

The third white variety is *Niagara.* Its berries are amber-colored and large, juicy and sweet with moderate acidity. It's a good mid-season grape and a standard white dessert one.

In the red category, Mr. Keul has two that he recommends. The first is *Caco* which originated in New Jersey. The vine is vigorous, hardy, and of medium productiveness. The berries are light red, fairly large, and are aromatic and vinous in flavor. The dessert quality is good and the grape is a mid-season variety.

Brighton is the other red that is hardy in this climate but in contrast to the above grapes, its flowers are self-sterile and require cross-pollination to assure a crop. Berries are dark red, sweet and medium in acidity. Flavor is especially aromatic and vinous which makes it of high dessert quality and a desirable home grape.

Of the blues, *Fredonia, Concord,* and *Van Buren* are the best for Colorado and Denver.

The *Fredonia* is vigorous, hardy, somewhat variable in productiveness with self-fertile flowers. Berries are black and large with good dessert quality. It is an early one which keeps and hangs well to the vine and is a good shipper well-suited to home, local market, and commercial growing.

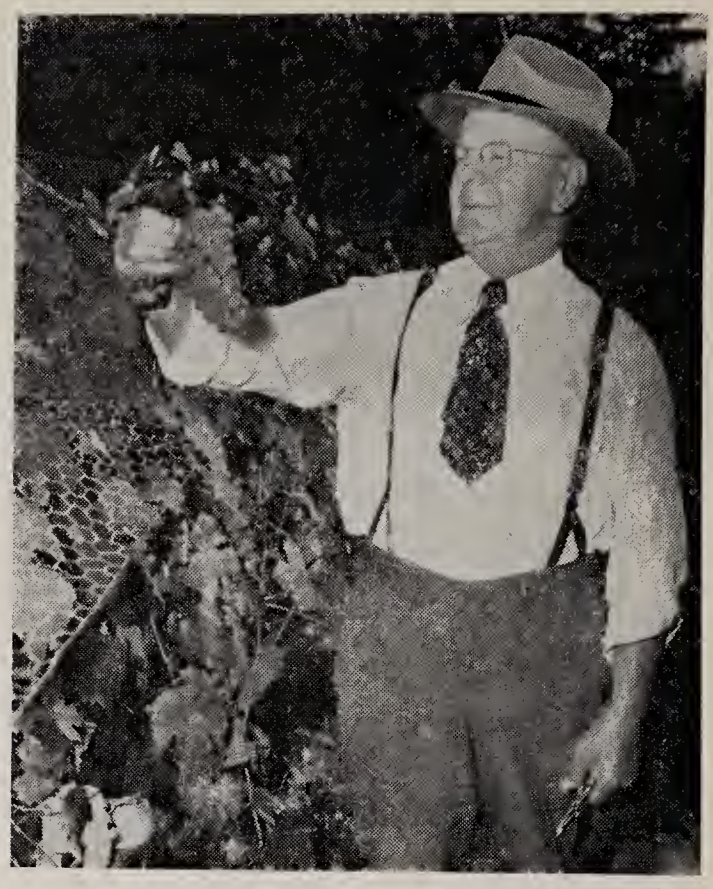
The *Concord,* probably the most widely known and grown of blue grapes and one of the most often seen in American markets, originated in Massachusetts about 1844. This is as hardy, vigorous, and productive a vine as the others, with self-fertile flowers. Dessert quality is good and it is a mid-season grape. Sometimes, however, it does not ripen fully in our short growing season. Generally, though, it is a standard all-purpose grape.

The *Van Buren,* relatively new (origin New York, introduced in 1935) is the third blue grape recommended. Its qualities and description are the same as for the *Concord* except that it is a very early grape as contrasted to mid-season for the Concord. The *Van Buren* is a good table grape and good for local markets. It is not suited for long shipment.

Now for the planting. The best results are obtained from selecting well-grown, heavily-rooted, one-year-old plants. When spring comes, dig a hole about the size of a bushel basket or larger, and fill it ⅓ full of well-rotted manure or compost and cover this with a layer of soil well tamped down. Now take the plant and trim back its roots to 8 to 10 inches and remove all injured roots. Next, place the plant against a sloping side of the hole, spreading out the roots in a fan shape, obliquely

downward. Cover these roots with a layer of soil and press out all air pockets. Then add more compost or manure and soil. The plant should always be planted about the same depth that it was originally. A pan-shaped indentation around the trunk covered with mulch, should be left. Remove all top growth except two, lower nodes (dormant buds) on the strongest and straightest cane. Leaving two buds assures having at least one of them sprout. As shoots grow, tie them to a stake.

Now comes one of the most important steps in grape culture—the pruning and training of the vine. This is somewhat difficult to explain without being able to demonstrate it, but is easier if divided into two stages, (1 the pruning of the young plant and 2) the pruning of the older well-established plant. Having selected a strong, well-rooted one-year-old plant to start with which was trimmed back to 2 nodes, the second year the strongest cane is again trimmed back to two buds to strengthen the root system. Again the new shoots are tied to a stake. The third year, select the strongest and straightest mature cane for a permanent trunk. It is always important to have as straight a trunk and side branches as possible for otherwise the flowing sap in spring may bypass some of the buds in reaching the end ones. Sap flows strongest and is richest at the extremities of the branches. All new, growing side branches are removed during the growing season except for four of the strongest, and these four form the permanent side arms. The lower arms should be about 2 or 2½ feet from the ground and the upper ones about 2 feet from the lower arms. This method is called the Kniffin system.



Mr. Keul admires a cluster of Niagara grapes raised in his garden.

With the plant now well-established, pruning is done when the plant is dormant to prevent bleeding. This can be any time between November and the end of February or first part of March, but *do not prune* when the canes are brittle from a hard freeze. If pruned in February or as late as March, opening of buds is delayed which helps protect them from a late freeze which so often plagues a spring in Colorado.

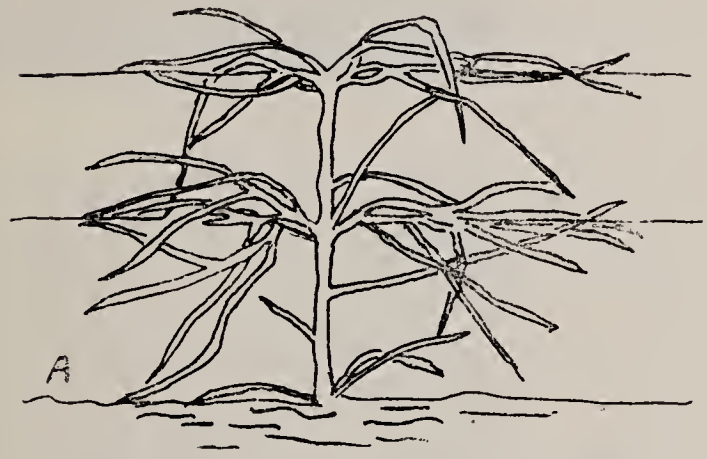
In pruning, remove all bull canes, suckers, and water sprouts (which are generally sterile) and all puny, spindly canes. Water sprouts are shoots that grow from suckers or directly from the ground. Bull canes are the extra thick shoots that have been swelled out of proportion by too much sap. These are sometimes used for a trunk.

The fruiting canes are pencil-sized wood with dormant buds 3 to 6 inches apart as distinguished from the bull canes with nodes 8 or more inches apart. The fruiting canes grow and mature one year, and then the following year produce green shoots

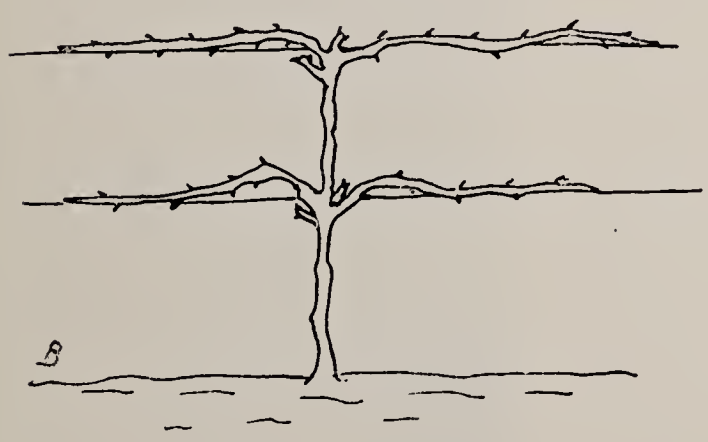
which bear 1 to 3 bunches of grapes to the shoot.

This four cane renewal system or Kniffin system is really the best for the home gardener. Each year select four of the best fruiting canes and tie them securely to the right and left of the main trunk. Trim the upper arms or canes back to 10 dormant nodes each and the lower arms or canes to 8 nodes each. In pruning, cut about 2 to 3 inches above a bud to allow for die-back. In addition to the four fruiting arms, leave close to the trunk and near each of the four arms, a spur with two nodes in reserve for the next year's new fruiting canes.

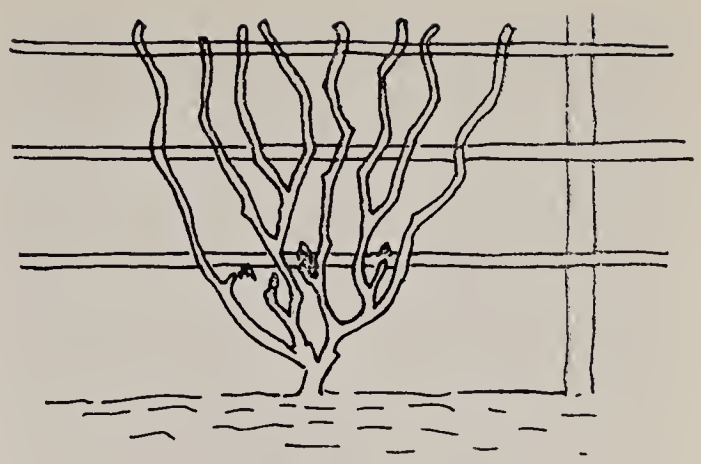
If you have old grape vines that have never been pruned or have been neglected for a long time, the fan system of training may be easiest to use. This means selecting five of the strongest canes 8 inches up from the ground on the main trunk and arranging them in a fan shape on a trellis.



Kniffin system. A. Before pruning.



B. After pruning.

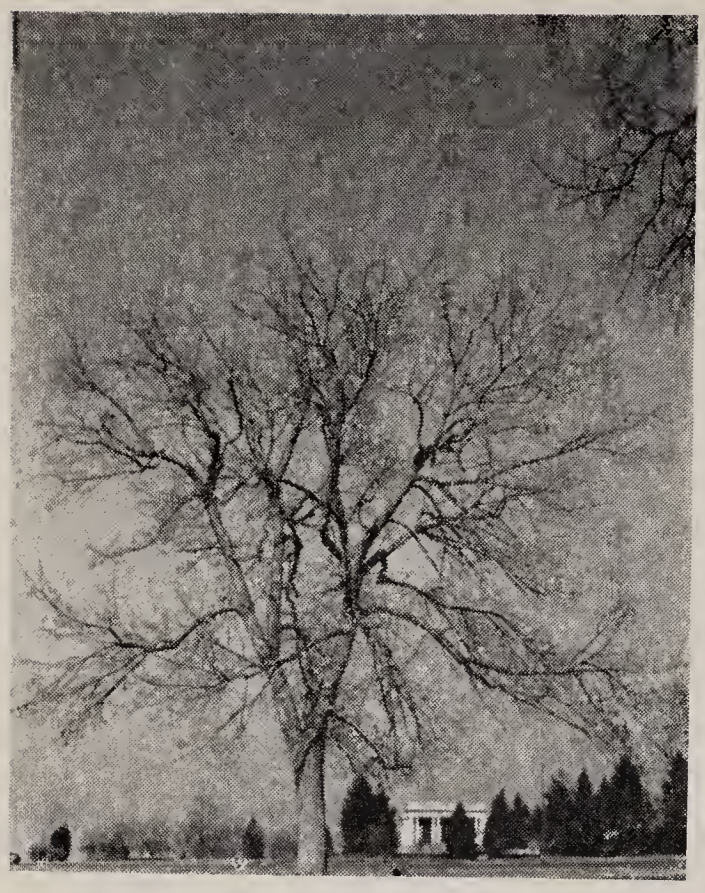


Fan system.

The important thing to remember is that no matter what training system you use, be it Kniffin, fan, horizontal-arm spur, or overhead or canopy system, the fruiting canes should be cut back after their shoots have produced fruit, and the new fruiting canes (from the spurs held in reserve), should then be pruned and tied in the place of the old fruiting canes.

Fertilizing properly from time to time is especially important too. For producing green foliage the plant needs nitrogen, phosphates in the form of steamed bonemeal or commercial triple or super phosphate to produce fruit, and potash for healthy growth and good root system. To bring the phosphate to the seeding roots within the soil, punch 5 holes 8-10 inches deep in a radius of 12-18 inches deep around the trunk of the plant and pour a small cupful of steamed bonemeal or a balanced fertilizer in each hole.

If the above information is carefully followed, Mr. Keul can practically guarantee results that should be satisfactory not only to the home-gardener but perhaps even to Bacchus himself.



Green Ash.

WINTER



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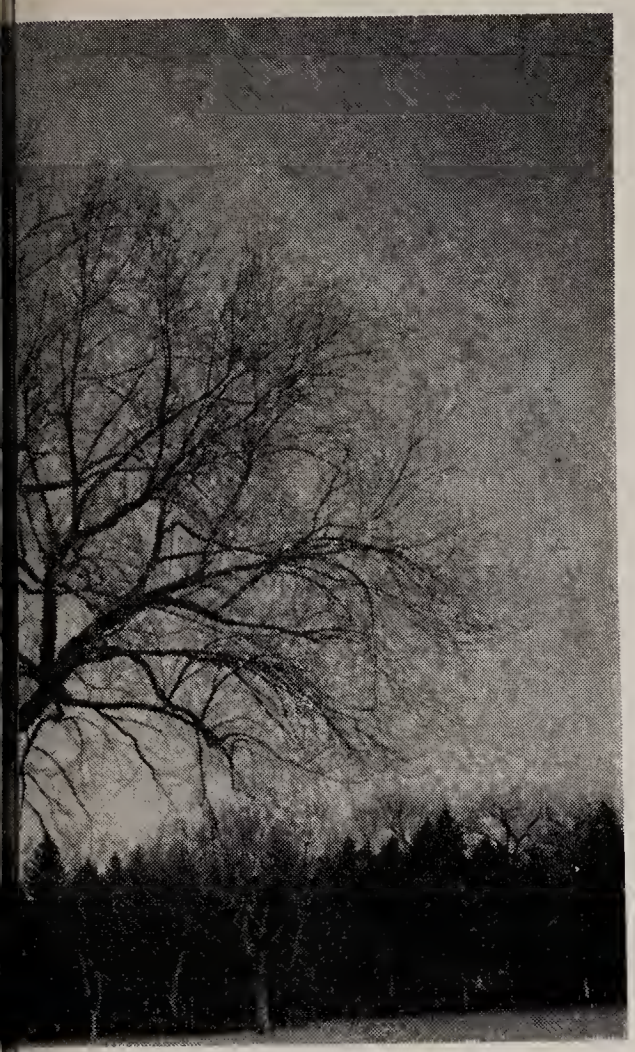


American Linden.

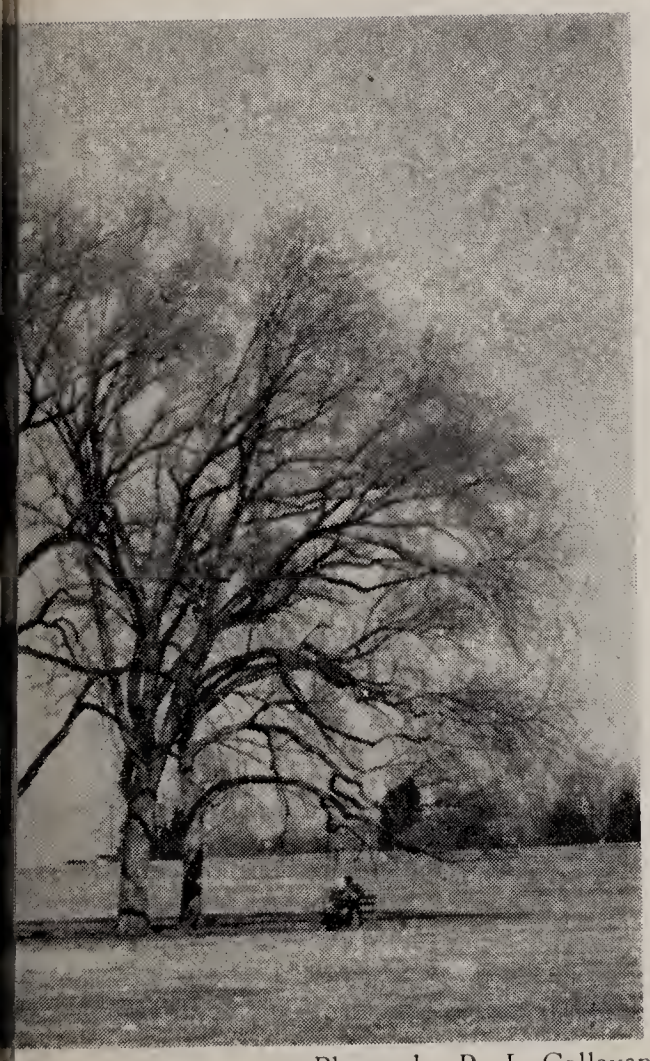


A pleasant grouping o

OUETTES



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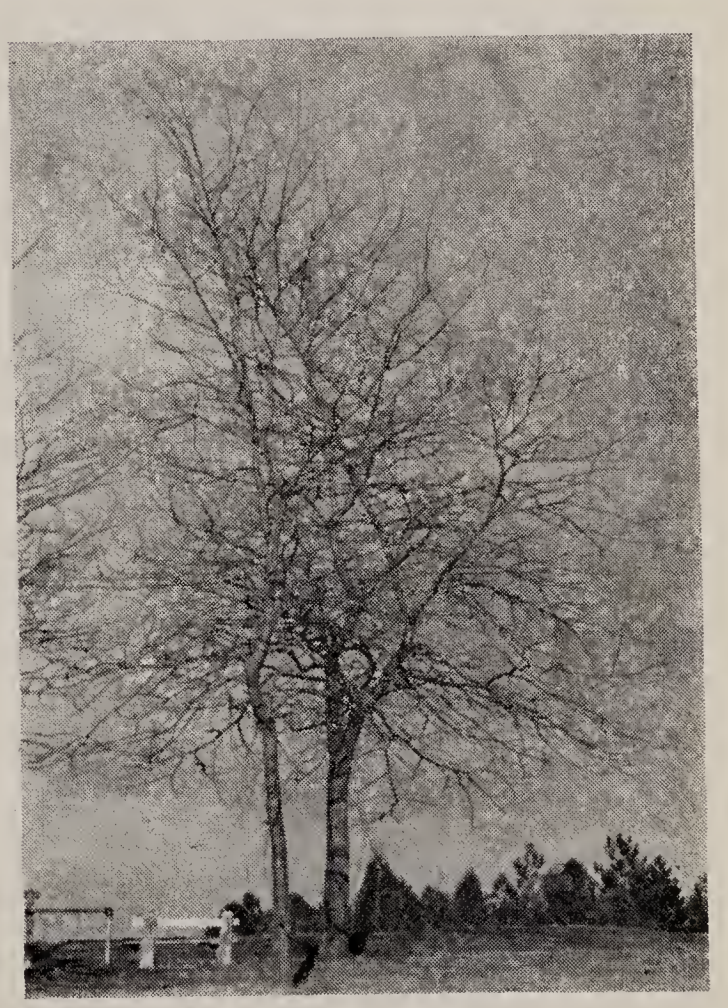


Photos by P. J. Gallavan

n Elms and Green Ash.



Little Leaf Linden.



Honey Locust.

1956 ALL-AMERICA GARDENS

EVERYONE wants the most delectable vegetables possible and the most beautiful flowers available for the home and home gardeners can have appetizing vegetables, full of their natural fruit sugars, fresh and tender, loaded with their crisp and juicy goodness. But they must be gathered fresh just before dinner.

Gardening is America's greatest hobby.

The colorful yard or a window box tells every passer-by the character of the folks who live inside. Did you ever stop to think about it? Gardening seems to bring out the best in people. It brings health, happiness and friendliness.

All-America Selections started twenty-four years ago. The most dependable judges of vegetables and flower varieties in the different climatic sections of America were chosen to grow the new varieties, before offering them to the public along with the best similar kinds for comparisons. The entire seed industry, in America and overseas, had to have confidence in those judges.

From the first year's selections, the gardeners of America found that these recommendations were dependable. The press was delighted to spread the gospel of these superior new varieties for better, more satisfactory gardening and living.

Canada was included, with trial judges and locations approved by the Canadian Seed Trade Association. To develop more information about regional and soil adaptation, along with disease-resistance and better over-all judgment, trial grounds have been increased from the original twenty to forty-eight.

Plant breeders from among amateur gardeners, as well as seed firms and public institutions, send their promising originations to All-America Selections for thorough testing in comparison with the best similar strains already in commerce.

Originators thus find the merits and faults of their entries, and either go ahead with them, drop them, or find how to improve their breeding work. Only the few really superior entries merit award and become All-America Selections.

Only one flower, Fire Dance petunia, and one vegetable, Gold Pak carrot, merited 1956 awards. One other, Paleface petunia was practically held over from 1955 and may be considered with the 1956 introductions. Seminole snapbean sold quickly but was largely used for planting stock to increase seed supplies so that is why 1956 is the first season for wide general distribution on that greatly improved garden favorite.

Each of these four winners is recommended as the best of its kind, being widely adaptable and easily grown.

Fire Dance petunia is of the vigorous growing, free-blooming, hybrid grandiflora or large size ruffled and fringed bedding type petunia. It is a rich bright salmon-scarlet with a bold flashlight yellow throat, about a foot high and with a plant spread of two feet or more. Only a few plants are needed to cover a sizeable space and it is the most colorful of all the grandiflora petunias. Ballerina salmon, and Prima Donna pink, are recent winners in this exciting new hybrid class.

Paleface petunia is the white hybrid multiflora, counterpart to the reddest of all, Comanche petunia. These are plain-petalled, rather large blooms and of the most prolific flower-

ing class. Plants are vigorous growers, about twelve inches high, compact and rounded or mound-shaped in habit. They are always in flower, from spring until killing frosts, and fairly cover themselves in a white sheet of bloom.

For bedding, borders, pots, boxes, and delightful cutting material for pleasantly fragrant arrangements, these everblooming petunias deserve their popular lead among flower favorites. Seeds may be obtained conveniently from reliable seed firms and dealers. Being true hybrids, seeds come direct from the originator's stocks, uniform and true in habit and color.

Gold Pak carrot brings a new conception of beauty and shape in this appetizing vegetable. Longest and most slender of any table carrot, richest orange inside and out, Gold Pak makes colorful appetizers whole or sliced, cheers up any mixed salad. Creamed, candied, simmered, boiled, sliced in soups, in molds for carrot rings, served with celery or peas, juice saved for brown sauce, Gold Pak has many table uses. It is sweet and tender at all stages of growth.

While Gold Pak is the most attractive carrot and without "shoulders," for easy pulling from the soil, it should be planted only in loamy, sandy or other mellow soils. Stony, stiff or heavy clay soils won't allow them to grow shapely and straight down.

Seminole snapbean brings that most desirable pole bean flavor to bush beans. At eating stage it is stringless, meaty and almost fiberless, very resistant to disease and recommended for all sections where snapbeans are grown. Seminole is even more attractive and dependable than the previous winning and most widely planted of all beans, Tendergreen. Pods are longer, deep apple-green, straight, smooth, and well rounded to the tips, with very little tapering and "snipper" loss at the ends. Seminole is the all-purpose bean for fresh garden use, freezing, canning and market.

Be first with the newest and best flowers and vegetables. Even most old standard varieties have been improved through constant selection until they are vastly different from and superior to their original strains. Nevertheless, the new All-America Selections stand out as the best of their kinds to answer the needs and desires of gardeners everywhere.

Seeds are conveniently obtainable from reliable seedsmen throughout the United States and Canada but order these new varieties now. The demand always exceeds the supply of new All-America introductions.

WHERE TO GET ALL-AMERICA SELECTIONS

THE new 1956 All-America winners are Fire Dance Petunia and Gold Pak Carrot. These All-America winners have been given the highest award possible for flowers and vegetables which means they are the finest in their field. These winners along with the latest and best in plant foods, pesticides, soil conditioners, garden tools and supplies are available at your favorite seed house or any reliable up-to-date garden center. These stores are glad to advise you and to help you choose items that are best suited to your particular situation so that there may be more and better home gardens for the future.

NEW FOR 1956, ALL-AMERICA GLADIOLUS

THIS year marks the first of the All-America Gladiolus selections to be made available to the public. These varieties have been selected by 30 judges scattered throughout the U. S. and Canada. They have been tested and deemed worthy of the All-America Awards only after careful consideration by the judges.

ROYAL STEWART (Ralph J. Pommert; Patent No. 1339, Class 450). Description: A truly remarkable new gladiolus variety that has been widely acclaimed for its consistently fine performance under an extensive test program throughout the United States and Canada. The lightly ruffled florets are five inches in diameter and are of good substance. They are a clear light red and the long flowerheads frequently carry up to 12 flowers open at one time. Growth is vigorous and healthy, with the total height of the plants running about five feet. On the occasions when it has been exhibited at Gladiolus shows, ROYAL STEWART has proved to be an outstanding winner of top awards.

APPLEBLOSSOM (Ralph Baerman, Carl Fischer; Patent Pending, Class 460). Description: A Gladiolus of the utmost delicacy of coloring, the predominating hue being snowy white with a faint touch of cream in the throat and an exquisite flush or corona of cool rose pink at the edges of the petals. Up to eight or ten trimly tailored florets, about five inches in diameter and of very heavy substance, are open at a time on spikes up to five feet tall. A vigorous, easy grower that performs excellently with only average culture. APPLEBLOSSOM will give you a new conception of Gladiolus beauty when it blooms in your garden.

The All-America Glads come packed in polyethelene bags, one to a bag. They are obtainable from your favorite cataloguer or dealer.

GOOD MANNERS ALONG TRAVEL LANES

"Resolution adopted at 53rd Annual Meeting of American Automobile Association, Washington, D. C., September 22, 1955.

"Principal travel lanes and the favored vacation areas are marked by a mounting heap of rubbish and trash left by a thoughtless minority of visitors.

"This careless minority of travelers is giving all travelers the unenviable reputation of being America's 'litterburgs.'

"The American Automobile Association deplores this litterment of travel lanes and defacement of public shrines and other public places. It offers its strongest support to all programs, national and local, to promote highway cleanliness; it will support stringent laws, regulations, and penalties designed to discourage the tarnishing or defacement of our national shrines and other points of interest; and it pledges itself to an intensive educational program designed to persuade the traveling public to treat the Nation's recreational and historical areas with that high degree of consideration which they deserve."

NEW ROSES

By VELLA CONRAD

EACH year rose fanciers eagerly await releases on the new roses. Always with the hope, that at last the hybridizers have found the near perfect. Long before announcements are made, and after hybridizers feel they have a worthy rose, a series of tests are made in gardens all over the country. Much worthwhile information is gathered from these sources and many times All-Americans are named.

The only rose winning the 1956 All-American award is Circus — a multi-colored floribunda, introduced by Armstrong of California. It is a colorful little rose. Ever-changing in color throughout its blooming period. In this area, the colors are more vivid with cooler weather.

Wildfire — Another Armstrong Floribunda is worthy of mention. Semi-double, vigorous and free-blooming. A dazzling scarlet that will be most effective when used in mass plantings with evergreens as a background.

Montezuma—This one is classified as a grandiflora, and credit again goes to Armstrong's. The catalogs cannot do the color justice. I watched it through many stages and in various gardens. It has a "color appeal", that I cannot find words to describe. I can visualize its coppery-pinkish tones planted with yellow roses to create a special picture.

If you like Fashion and Vogue, you will like Spartan (Jackson and Perkins Floribunda). Personally, I like the color even more than I do Fashion, and its blooming quality and quantity exceeds Vogue. The flower is as near a perfect "miniature tea" as you will find. Good foliage, plus free-blooming reddish-coral flowers gives this one a high rating with me.

Garnette Supreme (Floribunda-Jackson and Perkins) has garnet-red buds, and many of them. Arrangers will grow this one. I believe it will be more effective in private gardens grown in groups of at least three plants, and using accent plants. Floribundas are so adaptable that you can plant them in the perennial borders, and Garnette is one I want to find just the right place for.

Burnaby—the hybrid tea from Petersen and Dering. Its first color classification was white, but I believe this will be classified as a light yellow in this year's guide. Yellows and whites are the most difficult of all roses in this region, but I did have a number of Burnaby's that were worthy of the effort, and a credit to this introduction.

This article would not be complete without adding two more hybrid teas that I saw growing in Mr. A. E. Albera's garden. An exquisite soft pink — Michele Meilland (I positively drooled over this one) and White Swan—the perkiest, frilliest, cleanest white imaginable, and a hardy vigorous plant.

Your local nurserymen will be carrying many, if not all of these. You can depend upon him for good stock and courteous consideration.

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THE SEARCH

By G. E. RUMLEY AGRICULTURAL LABORATORY

ARCHEOLOGICAL research indicates that cultivation of crops for food began 10,000 to 20,000 years ago. With the development of primitive agriculture, there was a change in human culture from savagery and nomadic forms of life to a more settled existence. Our ancestors could then begin to lead a less precarious existence. The development of agriculture together with the domestication of animals gave them more time for the development of the better things of life. But progress was very slow until 2,000 B. C. Gradually new methods were developed. Irrigation was used in arid lands. Fertilizers were used. Chalk and marl increased the yields in certain areas. The plow was invented (it still exists, used in its primitive form in some parts of the world today) and terrace cultivation was used in hilly areas much as it is done today. With each successive improvement, yields were increased and man became more and more sure of his existence. Fallowing began to be practiced and also green manuring. Legumes were planted with crop rotation. But with the fall of the Roman Empire, the progress made in agriculture came to a sudden halt and no further progress was made until about 1600.

Then in the seventeenth century Roger Bacon proposed the use of inductive thinking for acquiring new knowledge, for finding explanations for natural phenomena, and for discovering natural laws. This meant the dismissal of all preconceived ideas and prejudices. It meant the close and systematic determination of facts and the formulation of natural laws to fit the facts. It meant breaking away from the Aristotelian standard of inquiry which was based on empirical generalization and which resulted in nothing but useless quibbling and was of no aid to science.

Today the scheme of common research is based on (1) observation of facts and formation of hypotheses in harmony with known laws, (2) deduction of conclusions from the hypotheses, (3) experimentation or comparison of inferred facts with those observed. In science, inductive reasoning plays the most important role, and the methods of the different sciences are, in the main, instruments of induction.

About this time the science of chemistry was developing to the point where experiments in plant nutrition were made. The main elements in plant nutrition—nitrogen, phosphorous, and potassium—were known. It was shown by different workers that nitrates, potash, Epsom's salts, crushed bones, and alkaline phosphates would stimulate plant growth. Little use was made of this knowledge because of the belief that plants require substances corresponding to their own nature for fertilizer. With the development of more precise quantitative methods, more information was gathered concerning plant nutrition. It was shown that plants assimilate carbon dioxide and release oxygen. That the source of nitrogen in plants is either organic matter in soils or atmospheric ammonia. These findings were all summarized in a book by De-Saussure in 1809 but they were overlooked. The humus theory of plant nutrition was still dominant. In 1840 Liebig published a book that organized the scattered facts of practical husbandry and of plant nutrition into a connected whole. With these facts in hand he exploded old theories, explained certain known phenomena,

formulated new hypotheses, and set forth certain natural laws in his book entitled "Recherches Chimique sur la Vegetation." This book stimulated a great deal of interest in agricultural problems. He disproved the humus theory of plant nutrition. This was the ancient theory, mentioned above, that plants need organic material of their own nature for proper food. Liebig taught that plants derive their carbon from the carbon dioxide and ammonia present in the atmosphere. He inferred that plants absorb simple substances such as water, carbon dioxide, ammonia, and minerals, converting them into complex organic compounds. He taught that the function of fertilizers is to restore to the soil the mineral constituents necessary for plant growth. He suggested the "law of diminishing returns" and the "law of the minimum plant nutrition." These mean that the yield of crops decreases or increases in exact proportion to the supplies of plant nutrients in the soil that are in a form available to plants.

The work of Liebig, the outstanding genius of scientific thought in agriculture, had the force to change the then existing concepts of fundamental agriculture. It was at this time that Malthus advanced his theory that the population was increasing faster than food could be produced. This theory along with Liebig's work, gave such tremendous stimulation to agricultural research that it has progressed steadily ever since, until today it is one of the major areas for scientific experimentation.

Today, with so many areas of the world living on starvation rations, it behooves all of us to be aware of the tremendous need for continued progress in agriculture and horticulture and to contribute in every way possible so that the search may continue until the whole world will have freedom from want.

THE CURIOUS LEAD

Excerpts from the 1955 Award Report of the National Lumber Manufacturers Association

There is an old adage which cautions "curiosity killed a cat." The admonition, if it be that, is free of explanatory detail and has lent itself to many applications. Of a certainty, however, curiosity has been no ordinary cat killer. Its defintion is the desire to learn and it has paced progress from cave to skyscraper, from foot travel to jet 'plane, from herbs to penicillin and vaccines, from tribal villages to the United States of America.

No trait in nature has so richly rewarded man. Curiosity has produced and nourished theory and it has sustained the experimentation that led to the great discoveries and accomplishments of science and industry. Supervised and directed it becomes research and the researcher is today an invaluable ally to production, advertising, and sales. His efforts have been so startlingly spectacular in some instances and so without results in others as to create the popular belief that research expenditures are the equivalent of gambling money. This view is held to some extent even by industry, although, happily, the majority see research expenditures as a form of market insurance and act out of a conviction well expressed by Jesse Hobson, director of the Stanford Research Institute, in the statement that "the biggest gamble is to do no research at all."

TOWARDS A BETTER TURF

JIM DIXON—*Parks Agronomist*

THE Parks Department has recently established test plots of various turf grasses to determine how they will respond if they are managed according to our concept of turf management. An ideal turf grass should have the following desirable characteristics:

1. Be a sod-forming, perennial grass.
2. Be able to withstand heavy abuse and wear.
3. Present a pleasing appearance throughout the growing season.
4. Be able to withstand chemical weed sprays.
5. Respond to commercial fertilizers.
6. Be drouth tolerant to the extent that it will require a minimum amount of artificial irrigation per season after the turf is established.

The grasses and mixtures being used in these test plots are as follows:

1. 40% Red Top, 60% Kentucky Blue
2. Merion Mix (Vaughan's)
3. Hall's U-3 Bermuda
4. Poa Trivialis—100%
5. 60% Merion, 40% Kentucky Blue
6. Buffalo Grass
7. Merion—100%
8. 95% Kentucky Blue, 5% Merion
9. 60% Kentucky Blue, 5% White Dutch, 35% Poa Trivialis
10. 50% Chewings Fescue, 50% Merion
11. 80% Kentucky Blue, 20% Merion
12. Highland Bent—100%
13. 50% Merion, 50% Annual Rye
14. Kentucky Blue—100%
15. 75% Merion, 25% Annual Rye
16. 75% Poa Trivialis, 25% Kentucky Blue
17. Achenbach Brome
18. Kentucky 31—100%
19. Alto Fescue—100%
20. 50% Redtop, 50% Kentucky Bluegrass
21. 70% Alta Fescue, 20% Redtop, 10% Kentucky Bluegrass
22. 25% Redtop, 75% Alta Fescue
23. 90% Crested Wheat grass, 5% Buffalo grass, 5% White Dutch clover
24. 90% Brome, 5% Buffalo grass, 5% White Dutch
25. 90% Russian Wild Rye, 5% Buffalo grass, 5% White Dutch clover
26. Blue Gamma—100%
27. Western Wheat Grass—100%
28. Salt Grass

With the cost of labor for maintenance ever increasing it behooves us all to seek out means whereby we can still maintain the present level of maintenance in existing turf grass areas, as well as in new areas. There are many facets to this problem, and the Denver Parks Department is not the only agency which is seeking the answers. At Fort Collins, Colorado A & M College, in conjunction with the Greens Section of the U. S. Golf Association and the Rocky Mountain Regional Turf Grass Association, has research projects under way. Also, the Extension Service at Colorado A & M, has the County Agent in many Colorado counties assisting with this work.



Plots of the various turf grasses at the east end of City Park.

From this experimental work it is anticipated that we shall, in time, find the answers to some of the problems that confront those who grow grass—whether it be in a private home owner's lawn, a park system, golf course, or school playground. More specifically, some of the problems are these:

1. What fertilizer element or elements are most depleted in our soils; what rate and frequency of application should be used;
2. What chemical spray will best control crabgrass;
3. What is the minimum amount of artificial irrigation needed to maintain turf grass.

Results from Colorado A & M indicate that feeding with a complete fertilizer, such as 6-12-6 with copperas and used in sufficient quantity to supply a total of six pounds of available nitrogen per one thousand square feet per year, in three feedings, is a good feeding program. Where nitrogen alone was used, ammonium sulfate at five pounds per one thousand square feet, and fed at this rate three times per season, seems to be adequate.

. With crabgrass control, Weedone LD-850 gave good results. However, turf grasses vary in their resistance to invasion by crabgrass. Merion bluegrass appears to be more resistant to crabgrass invasion than mixtures of Merion and Kentucky or Kentucky bluegrass alone; seaside bent grass seems to be relatively resistant to crabgrass invasion.

In regard to the amount of water needed to maintain turf grass, reports from Fort Collins indicate that 1.1″ per week is sufficient. The yield of clippings from plots receiving amounts of water equal to 1.4, 1.7, and 2″ per week produced no greater yields than the plot receiving 1.1″ per week.

In Denver, we have installed Buoyoucos blocks to assist in water conservation. These are plaster of paris blocks which are buried in the soil at suitable depths; by reading the blocks with a special meter, soil moisture which is available for the grass to

utilize, can be measured. From these measurements we can determine when to apply irrigation water.

Also, we are investigating the grasses mentioned earlier for possible potential use as turf grass. It is, I believe, generally conceded that Kentucky bluegrass is regarded as the standard of excellence. However, there may be other grasses or mixtures of grasses that could be used, depending upon the conditions and uses to which the turf would be subjected.

Results of these investigations will be answered in "The Green Thumb" so that those who are interested in promoting better turf may be kept informed.

There are many firms in the area who have donated their materials for many of these tests and I would like to take this opportunity to thank them for making their products available.

A PEEK AT THE MAIL

COMMENTING on the November issue of The Green Thumb, Henry Clepper, Executive Secretary of the Society of American Foresters, writes: " . . . I read with great interest and enjoyment the article on the State Park Board, and the two items on, and by, Sam Detwiler.

Jack Wagar's article on good manners in the woods is excellent, and Art Nelson's on Christmas Trees is very informative.

This is a splendid issue of the magazine. The Association seems to be prospering, and that's wonderful."

From Mrs. Roland C. Bergh, Chairman of the Conservation Committee of The Garden Club of America, comes the following congratulatory note:

"Dear Mr. Gallavan:

I have read with interest your Conservation issue of The Green Thumb. I congratulate you on including so many inspiring articles. . . . "

As proof that The Green Thumb welcomes constructive criticism as well as compliments, here is a comment made by Mr. W. H. Schrader of Manitou Springs, Colorado. " . . . As to The Green Thumb, I would like to see the old colored pictures on the cover."

What do YOU think?

And from another member who prefers to be anonymous comes this observation: " . . . I'm glad to see The Green Thumb print articles that express two sides of a controversial issue. I particularly have in mind the two articles on Chicago Creek written by Mr. DeBoer and Mr. Learned. I would like to see more of such articles for it is honest differences of opinion that stimulate interest, crystalize thinking, and promote action."

We're glad you feel as we do!

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NATURE OF THE PAST IN FOLK SONGS

By LINGO THE DRIFTER, The Balladeer From Lookout Mountäin
Colorado's Itinerant Folk Song Singer of TV and KFML-FM.

NATURE on the rampage has played a tremendously colorful part in the consciousness of the folk of the past who unconsciously documented a segment of our nation's history through their rough-hewn folk music.

Folk songs are the uninhibited expressions of the pioneers; of the trappers and cowpokes; of the miners and railroad men and timber cutters who dared to invade this area of the Rocky Mountains and challenge it on its own terms. And since the raw West was a new experience to them, they reacted to it through the vehicle of their singing legends.

Imagine the soft strum and twang of the guitar around the glowing embers of the late evening campfire. The well-blackened coffee pot is bubbling, the pipes have been lit, and the slow vivid musical recounting of a local narrative ballad echoes off the dark peaks.

Back deep in the hills of
The Rocky Mountains
There is a forest
That you should see
Black as the night
And grim as a graveyard
And the wild herds of an'mals
All let it be.

The wind don't even come there
To stir the charred bones
The sun it just don't shine
On that sad place
Where the big bears and bull elk
And delicate buck deer
Were all trapped with horror
On each silent face

It was late in the fall-time
The timber was tinder
There wasn't no water
Nuthin' was green
When down in the valley
a puff of smoke 'xploded



Lingo.

And the first climbing fingers
Of flame could be seen

The fire climbed higher
And the an'mals retreated
Up onto the high bluffs
To the smokey top peak
As the mothers with young-uns
Dropped and were perished
Through the smoke flew a vulture
Snapping his beak

All night the flames ate up
The tall mountain cedars
All night the Grim Reaper
Cut the living things down
When finally the morn broke
O'er the hot smoking ruin
Not a thing in the ashes
Was stirring around

So now on that scarred hill
In the Rocky Mountains
The still-standing tree trunks
Silhouette in the dawn
Black fingers of Hell
A-pointin' to heaven
Showin' where the souls of
The an'mals have gone.

Yes, gone. But not forgotten, thanks to the long memory of simple song straight from the heart of the folk.

DUMP-FOUNDED

By EDGAR JOHNSON, *Landscape Architect, Denver Parks*

WHEN you hear the words "Ruby Hill," what do you think of? A prairie hill covered with wild flowers? Ancient cars? A brick yard? A dump? A subdivision that failed? A park?

If you pick any one or all of these —you're right!

Most people think of Ruby Hill as the dump on the hill west of Overland Golf Course where trees and burnable refuse has been dumped for many years. Most of you will think of the continuous plume of smoke which has risen from this dump until early this year.

To those in the Denver Parks Department, it is "Ruby Hill Park"—but first let's go back and get a bit of the history of the spot.

For thousands of years Ruby Hill has risen above the Platte River covered in the spring and early summer with wild flowers. Undoubtedly Indians used this hill to look out across the river valley and plains for game or possible enemies.

The discovery of gold on Dry Creek which enters the Platte River near the foot of Ruby Hill brought the first settlement of the area in 1858—Montana City. However, this city of some twenty cabins was soon abandoned in favor of a better site further north where Cherry Creek enters the Platte.

As the years passed, this town to the north — Denver — spread southward until the level area across the Platte from Ruby Hill was covered with houses and businesses, and a race track called Overland Park was built on the east bank of the river.

But what of "Ruby Hill" itself? A "rubber stamp" subdivision of the west side of the Platte included the hill, but few houses were ever built and few streets were developed due to the steep slopes. These same steep slopes will bring back fond memories to many an oldtimer who was a young man or woman back when the automobile was new. For many years, nearly vertical roads were worn through the prairie flowers as the autos contested with each other to see which could climb highest on the steep hillsides.

A deposit of good brick clay brought the Overland Brick Company to the east face of Ruby Hill. The mining of this clay over the years created a great hole in the side of the hill. When the clay became depleted and the making of bricks stopped, the City of Denver took advantage of this hole as a dump site and began filling it with refuse. Due to the fact that the site was centrally located, yet not close to any houses made it an ideal site to burn trees and other such burnable refuse. Thus Ruby Hill seemed destined to be never more than an unsightly, smoky dump.

However, two things brought about a better future for the once beautiful hill. One was the rapid development of residential areas to the west. This not only crowded houses close to the dump, but created a need for a large park. The other was a far-sighted landscape architect who envisioned the area as a beautiful park.

As most of Ruby Hill was tax-delinquent, purchase of the land did not present any problems except for the Overland Brick Company which has not yet been purchased. The remainder of the area simply passed on to city ownership through non-payment of taxes.

Tentative plans were completed for

developing the area into a park. Except for the brick company, the park extends from Jewell Avenue to Florida Avenue and from Osage Street to the Platte River, giving a total of approximately 65 acres of land.

The main feature planned for the park will be an outlook and parking area similar to Inspiration Point in north Denver. This will be located on the highest point. Immediately to the south and east of this is planned a huge amphitheatre facing east and overlooking Overland Golf Course and the Platte River. The remainder of the park will provide an abundance of space for picnic areas, day camps, ball fields, and many other facilities.

Grading plans were worked out and since early in 1954 all dumping has been placed to carry out these plans. Many a trash hauler must have shaken his head in dismay as the Parks Department landscape architects and engineers could be seen surveying and driving stakes among the ashes and debris. They must have wondered at the sanity of these men when questions only brought talk of outlooks, amphitheatre, grass slopes, planting areas, views, etc. Certainly the messy, smoky dump was a far cry from any of these.

Slowly, the outlook point began to take shape. First the highest part of Ruby Hill was built even higher with debris, then this entire hill top covered with earth. All the natural top soil not in the dumping areas was carefully guarded by the parks men and they would not allow any to be scraped off. Also, there was no major construction in the area which might supply excavation earth.

However, the scarcity of available dump sites within the city limits helped provide a solution. Any sort of a large hole which can be filled with debris is welcomed as a dump—so, it was decided to dig a hole to supply the earth, then to fill this hole with dump. Thus not only would the earth be supplied, but additional dumping area would be created. The only problem still remaining is acquiring top soil to place in planting areas and earth to cover the last dumping area

All burning has now been stopped at the dump and the debris is being placed in the amphitheatre area. However, don't rush out to Ruby Hill and expect to see a nearly completed project. This phase of the project is estimated to require another one or two years—depending on how much debris is hauled to the dump by Denverites. Following this will come a program of soil building, planting, and construction before Ruby Hill can become a park.

Unfortunately, at present there are no funds available for development after dumping is completed.

However, our hopes and dreams call for wild flowers to once again bloom on the slopes of the hill. Native trees and shrubs are envisioned in the valleys of the area. Showwagon performances and perhaps summer operas may one day bring great crowds to sit on the grassy slopes of the amphitheatre. The expanse of the Overland Golf Course and the twinkling lights of south Denver beyond should form a beautiful background for performances on the stage at the bottom of the hill.

Surely some day sight-seeing buses will consider Ruby Hill outlook point as a must where tourists and visitors will view Denver's growing skyline and the mountains to the west. And perhaps the day may not be too far away when picnickers will consider this park the choice picnic grounds of the city.

Do It Yourself Aluminum Plant Containers

According to C. E. Wildon and C. L. Hamner of Michigan State University, flower pots, window sill trays, and plant boxes can easily be made of sheet aluminum.

A tray for a window sill, or a plant box to take a dozen seedling plants, can be made by using a lead pencil and straight edge to mark off on the aluminum a rectangle the size desired. Another rectangle is drawn around and outside of the first rectangle sufficiently larger in size to allow for the sides of the tray. The aluminum is cut with shears around the marked outer rectangle. The tray is then formed by bending the aluminum along the line of the inner rectangle, the corners folded inside and stapled in place with a stapler. The gauge of sheet aluminum to use is .005-H18, although for flower pots up to 4-inch standard the .004-H18 may be used.

The flower pots are cut from a pattern made by rolling a standard clay pot on a paper and tracing the path of the top and bottom of the pot with a pencil. A quarter circle path is sufficient. The aluminum is cut to the pattern and after forming, is stapled.

The sheet aluminum has not proven toxic to any plants used. The window trays have an advantage for the homemaker in that these trays may easily be colored with spray enamel to harmonize with room decorations.





The Fringe Tree—Chinonanthus Virginicus

The Botanic Garden in City Park near the small Lily pool has a mature plant of the fringe tree, the flower of which is illustrated in the accompanying picture. It is a small tree with fringe-like, drooping white flowers in May and June. The fruit is a dark blue, oval drupe, which means a juicy fruit with a single seed. It is hardy, although it is very rare in Denver. A large planting of it would be quite unusual in the spring. They thrive best in a somewhat moist and sandy soil and in a sunny position. It can be propagated by seeds or by layers.

There is a Chinese variety, Ch. retusa, which is more tender, but seems to be hardy in the Arnold Arboretum and might be tried in Denver.

S. R. DEBOER.

SEASONAL SUGGESTIONS

Put down those ideas and thoughts of needed changes in your garden on paper. This is the first step in making them materialize this spring.

1. Check over your garden equipment. Sharpen up your hoes and shovels with a file, replace worn out handles, repair leaky hose, and send the mower out to be sharpened if you haven't already done so.

2. Write your local nursery or seed store for their spring catalogues.

3. Dormant trees and shrubs can be transplanted now when the weather permits.

You can find the answer to many of your garden problems by referring to the December index issue of The Green Thumb. Copies of most back issues are available if you do not have a complete set.

COLORADO GLADIOLUS SOCIETY HOLDS BULB AUCTION AT HORTICULTURE HOUSE, THURSDAY, FEBRUARY 9th AT 8 P.M.

Color slides of outstanding varieties and arrangements will be shown. Plan to attend, all are welcome.

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The Green Thumb

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The Green Thumb

Vol. 13 MARCH-APRIL, 1956 No. 3

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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CALENDAR OF EVENTS

April 2—"Fun With Flowers" first Monday of every month, Garden Center, W. Alameda Ave and Kalamath St. 10:00 a.m. Mrs. Wm. R. Rutschman, Chairman.

April 9—Botany Club meets second Monday of every month 7:30 p.m. Horticulture House.

April 11—The Organic Garden Club meets the second Wednesday of every month, 8:00 p.m. Horticulture House.

April 14—Northern District Junior Workshop, second Saturday of each month, 10:00 a.m. Boulder, Colorado. Mrs. W. C. Sullivan, Chairman.

April 14 — Second annual garden work shop—Phipps Auditorium. Registration 9:30 a.m.

April 15—Garden Club of America visits Denver.

April 16-19—Garden Club of America convention in Colorado Springs.

April 20—Colorado Arbor Day. Celebrate this day by planting a tree on your home grounds or in your community.

April 28 — Plant auction — Belcaro shopping center at Exposition and Colorado Blvd., 1:00 p.m.

Green Thumb Program—9:00 a.m. every Saturday, KLZ on your radio dial—Pat Gallavan, Horticulturist, with Bill Jones.

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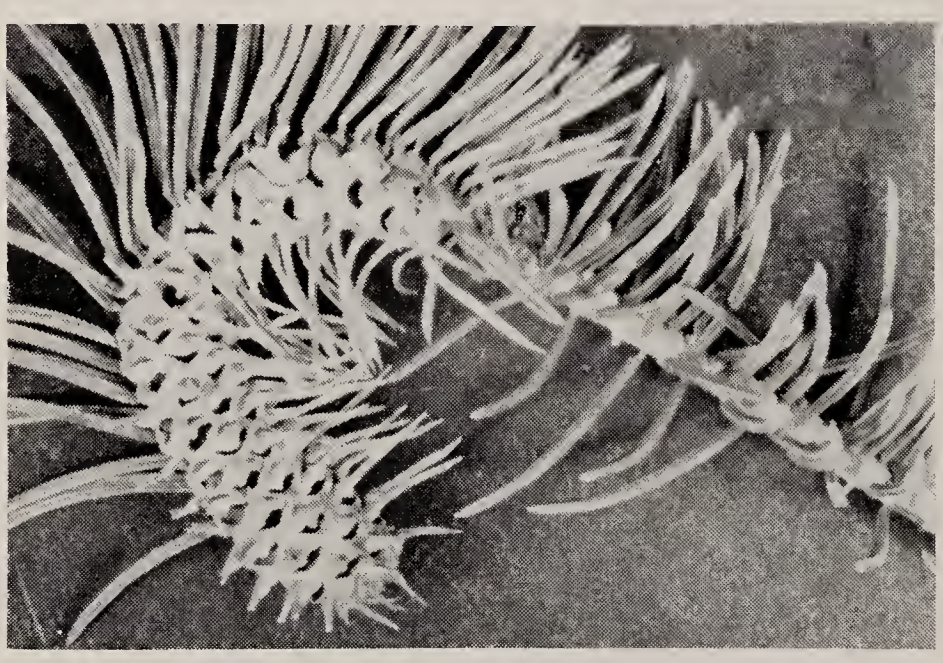
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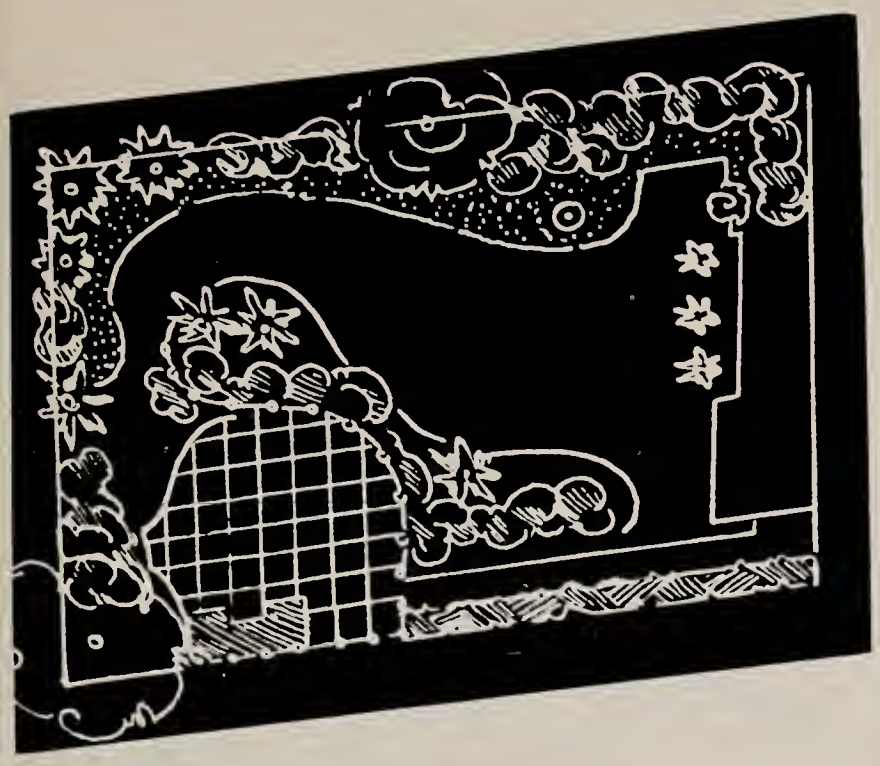
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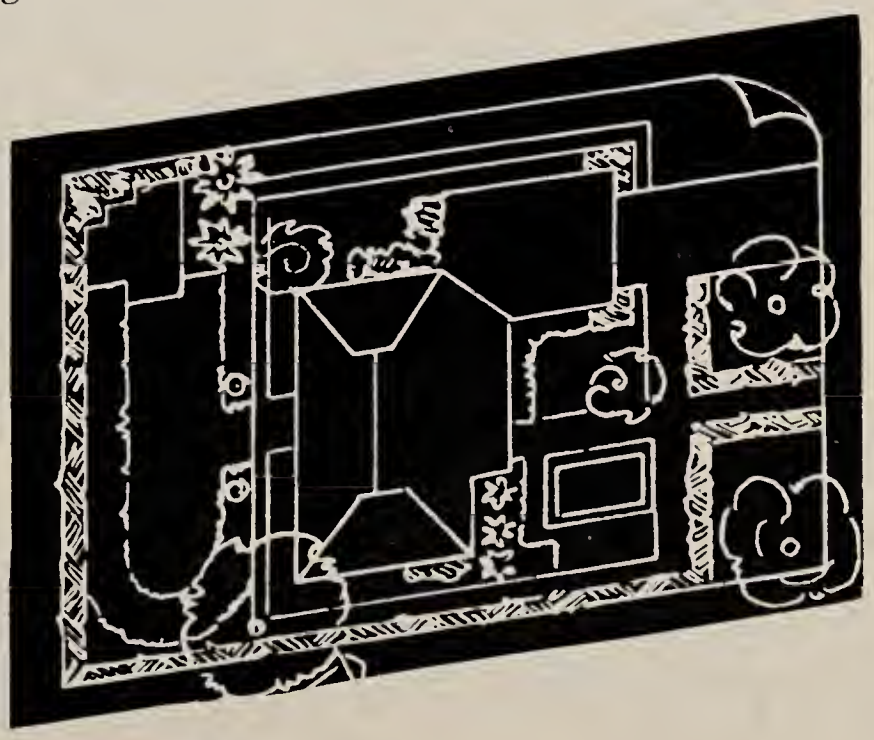
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WELCOME GARDEN CLUB OF AMERICA

THE Colorado Forestry and Horticulture Association welcomes the members of the Garden Club of America to their Annual Meeting in Colorado on April 15 here in Denver and on April 16-19 in Colorado Springs.

This number of the Association's monthly publication, "The Green Thumb," is dedicated to the Garden Club of America in recognition of its distinguished record of service to conservation and to all phases of horticulture.

The Colorado Forestry Association, founded in 1884, was the second forestry group in the United States, having been preceded only by a national group. Combining with the Denver Society for Ornamental Horticulture, another pioneer society, in 1944, the Association now has attractive headquarters at 1355 Bannock Street in Denver. It's Director, Mr. Patrick Gallavan, is a trained horticulturist who renders many services to the community. The library is the largest horticultural library in the region.

It is hoped that this number of The Green Thumb may prove of interest to all new comers to our community as an introduction to the horticultural problems of this region; to the tourist as a brief comment on the country-side; and to all of us as a reminder that "Rocky Mountain Horticulture is Different."

The members of the Editorial Committee along with the Association wishes the visiting members of the Garden Club of America a most enjoyable and profitable visit in Colorado!

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ERRATA (Green Thumb, February 1956)

P. 24, paragraph 2: "Roger" Bacon should be *Francis* Bacon.

P. 5, line 1, 3, 7: Sansevieria misspelled.

P. 17, Second to the last paragraph on the page and the last sentence should read: "To bring the phosphate to the *feeding* roots within the soil, punch 5 holes 8-10 inches deep in a radius of 12-18 inches around the trunk

P. 11 last line on the page should be "green *vines*."

BEAUTIFUL GARDENS IN COLORADO?

"WHILE in Denver, Colorado, gardens are increasing in number, this part of the country, as a rule, is not in its nature open to the cultivation of gardens, although its wild flora is remarkable enough to deserve special treatment".

Thus reads a paragraph in "Beautiful Gardens in America", the revised edition of which was published in 1928. It was the reason why the only section of the Union omitted from the book was that part containing the Rocky Mountains and the States immediately adjacent.

Space does not permit in this issue of The Green Thumb to show by pictures that the statement has failed to foresee what would happen in the thirty years to follow. Our well-attended garden tours tell the story.

Yet these "unexpected" gardens *are* different,—different from those in any other part of the country. There are a number of reasons for this difference, both cultural and psychological.

Mrs. Garry, in an article on p. 12 indicates how our climate presents both difficulties and opportunities in plant material. We must do without the host of broadleaf evergreens, but we can grow conifers and many other choice plants to perfection. That in itself gives a different character to our gardens.

Dependence on artificial irrigation again has great advantages and some disadvantages. Except in the "natural landscape development" our gardens need not suffer for lack of water. Colorado lawns for that reason are practically unexcelled. But irrigated gardens, for financial reasons, can hardly be large gardens. (Garden history tells us that irrigated gardens were among the earliest and among the choicest on earth).

Then there is the psychological factor. In our short cultural development, Colorado people have become different from New Englanders, Californians, Southerners, even from Texans and folks of the Middle West. Mining, stockraising, and agriculture breed a unique type. Let the psychologist interpret us; we *act ourselves*. The Spanish influence is present mostly as a corollary of our climate, partly direct.

In "Patio Philosophy on p. 56 Sam Huddleston indicates this finding for the intimate part of our garden; it is equally true for the rest. In Tucson I admired a new garden which the owner pridefully called "emancipated from the lawnmower". It fits Arizona.

Colorado gardens must fit *our* climate and *our* background. They will be livable the year around, they'll have some carefully-kept lawn and some outdoor living-rooms. They already reflect our immediate past history in spots; the ranch tradition is quite apparent. There is a beginning of *good* rock gardens, (too few alas!). There is a beginning of the use of fine native plant materials. We find, here and there, running water being used—pumped on itself for economy reasons.

Art in the making is always prone to excesses. Colorado garden art is in process of evolution so we may have to overlook occasional "horrible examples" in our efforts of creation. We are, however, showing some fine types, illustrative of Colorado climate and Colorado people. Yes, we do now have a number of "Beautiful Gardens in Colorado".—MWP.



Arrangement and photo by Mr. and Mrs. Ray Turnure

ARRANGEMENT OF THE MONTH

HOYA or waxplant, used for the base of this arrangement, will live in water for months and stay practically the same, growing very slowly. The branch with tiny leaves is aspen forced into leaf in water and combined with bright yellow daffodils in a green and brown pottery container for a true breath of spring!

WEATHER AND THE ROCKY MOUNTAIN GARDENER

By ANNA R. GARREY

IT'S more than seventy-five years now since Richard Jeffries walked through English meadows to observe and record in minute detail the terrain he covered. Even differences of climate in a single field were noted and set down in a timeless record.

The average lay gardener makes no notes on trial and error, on climate, or on weather as the planting seasons come and go, and yet, over the years, experience teaches many lessons.

What shall we do specifically about weather, and climate?

In this particular region, outsmarting the weather and cooperating with climate may become one of the most intriguing sports imaginable. It is open to all ages, sex is no barrier, and it's an all season affair.

If you outwit the two (weather and climate), you will enjoy them and let them play no tricks on you. Then you can smile and say;—"Yes, we have a divine climate, but isn't our weather 'awful' "?

With this in mind, I should like to set down some of the things I've discovered about this sport over a good many years.

It's a good thing to begin, minutely, in one's own door-yard, for, in an incredibly small footage, there are definite and defined variations of climate here in the amazing Rocky Mountain region.

Shade, which, in the East is moist and warm, here is cold and dry. The sun on a southern exposure has almost burning-glass intensity. Shade and sun, therefore, may become assets or liabilities.

Your tulips, for instance, planted to the south will bloom fully two weeks before those in heavy shade to the north. This means a greatly extended period of bloom for the same flowers, planted at the same time, but in different locations. Recognizing this fact and making use of it adds several points to your score.

You long for lovely potted plants on your sunny terrace. Unless you are meticulous in the extreme, you end by having "fried geraniums." Some of us would even forego potted plants on the stone floor of a hot area near the house. Your recognition of this situation, however, is another score in your favor.

You have learned not to crucify an espaliered tree on a western or a southern wall. You may even have decided to forego one altogether.

Next, perhaps you have observed your thermometer on some April morning when you have stepped out to a snowy corner of your garden. It may have recorded thirty degrees. To your astonishment when you came out two hours later, the snow had disappeared and the temperature was eighty, for, by this time, the sun had traveled to your corner.

It takes some stamina for a plant to adjust to such temperature fluctuation in so brief an interval.

I was told by one of our most distinguished growers of evergreens, whose article appears in this issue, that on November 5, 1950, the temperature in Denver was 61. On November 6th, it was 10 below zero.

During the particularly delightful autumn-summer season of that year the trees had had no chance to harden because of the mild weather.

In addition to the abrupt temperature change mentioned above, during the following February the thermometer registered 25 below zero in Denver, and 50 below in the nearby mountains.

These profound ranges of temperature are happily quite infrequent, but they must be reckoned with in planting, as we must also consider the sharp contrast between our night and day temperatures in summer, which prove such an asset in our personal comfort.

Chinook winds bringing warmth and dryness to the winter scene, and sudden hail storms which mar midsummer's beauty, cannot be ignored either.

The answer to all this is a fascinating question rather than an answer. What to plant? This question involves your own experimentation and observation, aided by visits to those wise growers who have lived in this part of the country for many years.

The above mentioned problems unlock the secret as to why altheas, weigelias, red-bud, dogwood and many other familiar and delightful plants might live here for one year, or even for five years, only to perish on some unexpected night when there is a temperature drop beyond their tolerance, a long winter drought, or a late spring frost.

You score a point when you learn to make the proper substitutes for some of these old friends, perhaps among the viburnums, cotoneasters, privets, or lilacs, though the last may miss a flowering season now and then.

Look at the picturesque, corky, deep clefts of the cottonwood boles. No February sun could split the bark of this wise old native. He never unfolds his leathery leaves till danger of late spring frost is over.

We know, on the other hand, that the smooth bark of the lovely lindens (European or American) or the beeches, must be protected against the penetrating rays of our winter sun, otherwise they will split open. We begin to know why we so seldom see a sugar maple or a broad-leaved evergreen.

This background of experience, which is based on time and on human labor, is extremely meager here because we live in a new countryside. We have not, therefore, touched beyond the fringe of crops which may be grown or ornamentals we may use.

The high altitude laboratory at Climax, Colorado, where cosmic rays are being studied, challenges the imagination when one thinks of the cosmic ray in relation to plant mutation.

There is no miracle of spring in this mountain and plain country, for we pass almost instantly from winter to summer. Our winter-kill comes, ironically enough, well toward the spring, when, after cloudless days, sun drenched and lovely, which have coaxed out incautious leaves, we may have sudden, killing frost.

Briefly then, our rainy season is a "snowy season" instead, due to the altitude and to the proximity of the mountains. Much of our moisture is to be expected in March and April. Late spring frosts are in order, so that we do not set out our tender annuals till the end of May.

We must be mindful of our extreme range of temperature. For the most part, however, we expect and get sunshine, penetrating, even dessicating. This suggests occasional winter irrigating for we live in a semi-arid region that depends on water from the mountains to augment our limited amount of rain or snow.

To sum up, our climate, year in

and year out, is divine,—or so *we* think. Enjoy it to the full!

Our somewhat erratic weather may be atrocious and that, just at the wrong moment. Yet, we gardeners have learned to score against these lethal vagaries by careful selection of our plant materials.

We make our most triumphant successes in the game of outwitting the weather by the proper placing of the less rugged strangers we wish to introduce into our gardens. Some will be placed to the north and some in a sheltered corner. In such locations a red bud, or a magnolia, may surprise us.

And always in view, there is the great barrier of the mountains, where, in an hour, we may go from summer back to spring, or from early autumn on to deepest winter as we reach the austere heights above.

Inscrutable, serene against the vast horizon, white under the snow-pack of early winter, veiled in the silent mystery of the fast falling snows of spring, shining, glistening in the sun, the mountains remain—lifegiving or life withholding—in their gift of water to a thirsty land.

Who then shall record the secrets of this noble, vast, and challenging terrain, as Richard Jeffries once, long ago, captured the fine essence of the tiny fields of England?

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THE MARVELOUS WORLD OF PLANTS

By HELEN MARSH ZEINER

AS one travels across the mountains, among the many interesting things to be seen are the dwarfed and gnarled trees at timberline. Species which form magnificent forests a short distance below timberline are here reduced to shrubby mats and "sculptured by nature" into grotesque shapes and forms.

Rather than thinking of these timberline trees as being "sculptured by nature", which implies mechanical effect of some sort, it would be better to think of them as crippled trees, maimed and stunted by their harsh environment. It is true that mechanical effects of the wind may play some part, but other causes are of greater importance, and the dessicating effect of the wind is far more important than any mechanical effect it might have.

Conditions at timberline are indeed severe. Here is a region of short growing season with cold nights even in the middle of the summer, extreme winter temperatures, cold soil, much of the moisture in the form of snow, and high drying winds. The wonder is not that treees are stunted but that they can grow at all.

First, absorption of moisture from the cold and often frozen soil is difficult. In addition to this, the trees are exposed to frequent high winds which increase evaporation from the plant. Buds on the windward side are often injured by these drying winds, and therefore growth on the windward side may be retarded. This results in the familiar one-sided tree, seen not only at timberline but in other exposed places as well.

Snow in winter affords some protection to timberline plants. Twigs extending above the snow are often killed by drying wind and extreme cold, while those below the snow survive and growth on the protected side is stimulated—the result often being thicket-like growths of stunted evergreen trees.

The traveler may note that timberline is irregular, extending higher on warm south slopes where conditions are somewhat less severe.

The distorted shapes of timberline wood have lent themselves to use in flower arrangements, unique lamp bases, and what-have-you. The traveler who has an interest in photography seldom goes home without at least one picture of a timberline tree, for they are indeed beautiful in their odd, twisted forms—but to many of us the most beautiful thing about them is their tenacity in clinging to life in the arctic conditions of timberline, where no tree should rightfully be!

Columbine, the state flower for Colorado, takes its name from the Latin, *Columba,* meaning dove. Its scientific name *Aquilegia,* however, comes from *aquila* meaning eagle, so it seems observers have differed in their allegorical feeling for this lovely wildling. Another name for it in years past was "lion's herb" stemming from the belief that it was a favorite of that noble beast.

At one time it was suggested, and a committee was formed, to make the Columbine the official flower of the United States (as the rose is for England and the lily is for France) because its common name suggests Columbus and its scientific name ties in with our bird of freedom, the eagle.



Yucca glauca

THE PLANT-LOVERS' YEAR IN COLORADO

By RUTH A. NELSON

DRIVING along foothill roads in January we see the bunched yellow-green sabres of yucca (*Yucca glauca*) tinting the dry slopes while the higher elevations are robed in dark evergreen forests. In February sap is starting upwards and willow shrubs (several species of *Salix*) brighten along stream banks and in bogs showing rounded individuals



Easter Daisy

and nature's informal hedges set out in yellow, orange and bronzy reds.

About March we start searching in sheltered spots on warm south slopes of the foothills for the Easter daisy (*Townsendia sericea*). It grows close to the ground usually with several white or pinkish blooms nestled in tufts of narrow gray-green leaves. Along stream banks pussy-willows are budding.

April sees the catkins of alder, birch, and aspen hung out from leafless twigs, shedding clouds of yellow pollen. On vacant lots and bare banks from which snow has recently melted, close to the ground, the "salt and pepper" blooms of *Cymopterus acaulis* appear. Now begins the procession of pasque flowers (the species is *Pulsatilla ludoviciana*) up the mountains as the season advances. They will be pushing their clustered furry stems through dead leaves, pine-needles, or dry grass, opening deep cups of lavender showing yellow stamens within. Late April may bring the golden snow-lily (*Erythronium grandiflorum*) in abundance, especially in the Steamboat Springs area and later on at higher elevations.

By May the flower parade begins in earnest. The sand-lily (*Leucocrinum montanum*) opens six-petaled star-like white blooms in clumps of bluish green leaves on vacant lots or foot-hill slopes. At higher levels in open forests, the snowball saxifrage (*Saxifraga rhomboidea*) pushes its white heads up above flat rosettes of bright green leaves; in moist meadows buttercups appear; on banks and ledges the evergreen kinnikinick (*Arctostaphylos uva-ursi*) displays its numerous pink jug-shaped blooms; late in May the large blooms of the thimble-berry shrub (*Rubus deliciosus*) suggest single white roses.

June presents fields of color. Yellow fields are often western wallflower (*Erysimum asperum*). Its individual blossoms are cross-shaped, 4-petaled; yellow banks may be golden banner (*Thermopsis divaricarpa*) with flowers shaped like sweet-peas; now the yuccas have stout spikes of



Kinnikinick



Snow Lily

creamy white bloom; in wet meadows, such as those of South Park, great sheets of pink are the shooting star (*Dodecatheon radicatum*); or if of pale blue the plants are wild iris (*Iris missouriensis*); and if, perhaps, on Rabbit Ears Pass, and a few other similar areas, you find hundreds of stout shoots of overlapping leaves standing up from bare wet soil, this is false hellebore (*Veratrum californicum*).

July brings much blue and violet. Several species of penstemon bloom in drifts and fields. The earliest, begining in late June, is the low penstemon (*Penstemon virens*) abundant among the scrub oak along Highway 24 through Ute Pass, also south of Castle Rock, and in other localities. It has glossy leaves, slender stems with elongated clusters of small tubular flowers, true blue on close examination but misty in the mass seen from a distance. The most brilliantly azure of all is the alpine penstemon seen as a several-stemmed solitary plant or covering gravelly road embankments in the higher foothills of the eastern slope and especially along the Pikes Peak Highway. A tall species with spire-like stalks of purplish-blue, abundant about Estes Park, Lake George and widely distributed elsewhere on gravelly soil, is the one-sided penstemon (*Penstemon unilateralis*). Lupines with their seven-fingered leaves and pea-shaped flowers also provide blue in open forests and in sagebrush country throughout the state. Now, too, we have the loco weeds (species of *Oxytropis*), also in the pea family, with their blooms in various colors. The Colorado loco is brilliant magenta, others blend from white through all the shades of pink, rose and lavender. They are seen as clumps and groups on mountain pastures and in aspen

groves. Here and there flashes of scarlet appear among the other colors indicating Indian paintbrush (species of *Castilleja*). Other flowers of this season often seen growing among low shrubs or in meadows are the lovely mariposa lilies (*Calochortus gunnisonii and C. nuttallii*). They are similar with their 3-petaled cups of lavender or ivory, each petal bearing golden hairs and a dark splotch at its base.

If you take the high roads, perhaps to the top of Pikes Peak or up Mount Evans or Trail Ridge, or over other passes you will traverse the subalpine zone as you approach timberline. Here are luxuriant flower gardens. Tall chiming bells (*Mertensia ciliata*) with pinkish-blue flowers and bluish-green leaves bend over dashing streams. Nearby may be one of the most striking plants of the Rockies, Parrys primrose holding its clusters of brilliant rose-purple blooms above the icy water. In the lush meadows are large clumps of the tall, very dark flowered, subalpine larkspur (*Delphinium barbeyi*) and the strong yellow of several species of *Senecio*.

Still higher you may see the true alpines at their best early in July. Myriads of brilliant yellow saucer-shaped blooms are not buttercups but alpine avens (*Sieversia turbinata*). The "cushion plants" make a patchwork quilt among the rocks, pink is moss campion (*Silene acaulis*) white is alpine sandwort (*Arenaria sajanensis*); or it might be *Phlox caespitosa*. This phlox may sometimes be pale blue as well. Brilliant skyblue is alpine forget-me-not (*Eritrichium elongatum*). Other alpines not strictly of the cushion type are: Fairy primrose (*Primula angustifolia*) bright rose with yellow eye, alpine mertensia, blue and mountain dryad (*Dryas octopetala*) with eight white petals and a golden center.



Shooting Star



Snowball Saxifrage



Mariposa Lily



Parrys Primrose

August is gentian time. At the base of the foothills, along irrigation ditches or where water stands, may be found the violet goblets of the prairie gentian (*Eustoma russellianum*). On dryish open slopes at middle elevations there are the clustered closed cylinders of Bigelows gentian, in the lush subalpine meadows and along mossy stream banks the Rocky Mountain fringed gentian (*Gentiana thermalis*) appears as pools of deepest blue and on the dryer grassy fields nearby Parrys gentian opens its black buds in sunlight, to show true blue faces. Still higher, towards the last of August and into September, on the alpine grassland the Arctic gentian (*Gentiana romanzovi*) displays angular cups of greenish-white marked strongly with midnight blue. In late summer from the base of the mountains to the highest peaks clumps of harebell (*Campanula rotundifolia*) hang out lavender-blue bells from slender stems in great profusion. This plant has the most truly bell-shaped bloom of any.

In September asters, daisies and their relatives take over at all elevations. The rosy violet of tansy aster (*Machaeranthera*) is seen in globes and mats along roadsides. Plumes of gayfeather (*Liatris punctata*) in the fields are about the same color. Gaillardias with large, red-centered golden heads, rudbeckias, and sunflowers line the roadsides and brighten the meadows. On alpine tundra the large yellow faces of rydbergia turn towards the sun. Its shaggy foliage justifies its name of "old man of the mountain". Gold pours down every ravine and canyon in October as aspen groves and narrow-leaved cottonwoods indulge in a final splurge of glory. Chokecherry thickets and



Alpine Phlox



Gaillardia

sumach bushes are splashes of rose-red and many smaller shrubs light the canyon walls with bronze and orange coloring. Scarlet kinnikinick berries nestle among glossy green leaves and junipers are thickly set with the bluish berry-like cones which will furnish winter food for many birds.

Warm, sunny days in November tempt us to wander along lanes where wild rose hips and snowberries (species of *Symphoricarpos*) give interest and color. Occasionally in a sheltered nook a few harebell bloom or the magenta plume of loco catches our eye. What fun to search for Christmas greens through the snow-patched December woods! Douglas-fir with its pendant, fringed cones is a favorite, but any of the pines, ponderosa, limber or pinyon, are worth having if cone-bearing branches are available. The soft silvery-green needles of white fir provide the most beautiful greenery that can be secured. So we come to the end of a plant-lover's year with our arms full of fragrant, glistening evergreens.



Arctic Gentian

NOTES

[1] The months given for various species are, in general, for the earliest bloom in most favorable localities. In colder situations and at higher altitudes the same plants will often be found blooming at later dates, so the season often extends over several weeks.

[2] The citation of localities does not mean that species referred to are confined to these areas but only that fine displays may be expected in the places mentioned.



Maroon Bells

ASPEN—CRYSTAL CITY OF THE ROCKIES

By Len Shoemaker

ASPEN, seat of Pitkin County, one-time famous silver mining camp, presently an equally famous skiing resort, nestles idyllically in the Roaring Fork Valley of western Colorado at 7900 feet elevation. Around it lies the vast White River National Forest, the most spectacular part being in the majestic Elk Range, southwest of Aspen. And this same Elk Range is Aspen's playground, where its residents and visitors cavort on the snow-covered slopes in the wintertime and hike or ride over its flower-bedecked hills in the summertime.

Beginning in 1879, and continuing until 1893, Aspen was the scene of the most fantastic silver stampede ever seen in the West. From a group of three intrepid prospectors who arrived there in June 1879, the city grew to 12,000 residents and 5,000 transients in that 14 year period. Its fabulous mines produced over $100 million in silver, lead, and zinc ores. Fortunes were made overnight and the city prospered accordingly. Three school buildings, a high school, five churches, a county courthouse, a hospital, an armory hall, many commercial blocks, several hotels and

theatres, and hundreds of beautiful residences gave the city an attractive stability which earned for it the well-deserved title—Crystal City of the Rockies.

The history of its rise and decline has been recounted over and over. At first it was handicapped by its isolation, for the Continental Divide and the Elk Range stood between it and the already settled areas of the state, and retarded development. A freakish placement of the ore bodies on Aspen Mountain created a conflict among the mine-owners, and a long series of law suits resulted. These also impeded its progress. Wagon roads were built across the barriers in the early 1880's and two railroads reached it in 1887-88. After that time, its development and prosperity grew rapidly and its permanence as one of the best cities of the state seemed assured.

However, this was not to be. Ill-fortune struck when political machinations closed down the free coinage of silver and established the gold standard. Almost over night Aspen was doomed and its 50-year decline began. Mines closed, banks failed. business ventures collapsed. People moved to new locations, and eventually the town drowsed under the western sun, a forlorn reminder of that once proud queen—the Crystal City of the Rockies.

Many of the fine buildings were torn down, others sank into near-obscurity from desertion and decay. The fine residences became dilapidated and ill-appearing for the want of repairs and paint. The town itself had a drab, deserted appearance. Its most enlightening features were the rows of large cottonwood trees which adorned its streets, and the gardens of beautiful sweet peas and other flowers which annually adorned the yards of the residents who still clung to the old camp. The cottonwoods. planted in the 1880's by some nature-loving official, still add a charm to the town.

During the years of decline, a few persistent individuals kept fighting for a revival of the silver industry. Mining projects were started only to fail or to drag on unprofitably for a few years. In the 1920's, the writer (then District Forest Ranger there) advocated the development of the recreational possibilities of the town and the region. Other forest officials urged some action along that line. Art Carhart, who spoke at a meeting of the local Chamber of Commerce in 1922, was scornfully told by one of the civic leaders, "We are not interested in recreation. All we want is another good silver strike, and then we'll boom again."

Still silver-minded, most of the business men of the town couldn't see the opportunity that was knocking at their door—couldn't visualize the many and varied natural features that could be turned into profitable industries. Recreation as a business was entirely outside the realm of their imagination. Some horseback riding, hiking, and mountain climbing had been done, some coasting and a little skiing (by miners to and from work) had occurred, but few, if any, had dreamed of using natural resources in a business way.

Then in 1937, Tom Flynn, a former Aspen boy, encountered some professional skiers and incidentally told them of the snow-clad slopes of the Elks. They were interested, so he took them to Aspen and thence, assisted by a few of his Aspen friends, took them into the mountains. They were enchanted with what they saw, and started plans to build a gigantic teleferique and hotel at Ashcroft. These plans were abandoned during World War II, but did result in the construction of the Highland-Bavarian

Lodge, a skiing headquarters, at Highland.

Through the interest aroused, such internationally known skiers as Andre Roch and Otto Schniebs visited the region. Schniebs' remark when he first saw Montezuma Basin has become a classic—to wit, "Mein Gott! Vat schno!" Other skiers came and the skiing possibilities of the Aspen country were advertised far and wide. Roch helped local people to form the Aspen Ski Club and marked out the line for the now famous Roch Run, the first of many runs which were developed on Aspen Mountain. A sled-tow was built at the foot of the run after it was cleared, and Aspen became a ski resort.

In 1945, Walter Paepcke of Chicago, his wife, and some friends visited Aspen and were charmed and delighted with its setting, its old Hotel Jerome, and its old Victorian dwellings. Paepcke was impressed with the overall chance of reviving the old camp. He foresaw a business venture profitable to himself and those among the local residents or elsewhere who might become associated with him. He formed the Aspen Company and the Aspen Skiing Corporation which leased the Hotel Jerome, bought up some fifteen residences for use as guest houses, and began securing right-of-ways for an up-to-date chairlift to replace the old tow on Aspen Mountain.

In 1947, the new resort town started with a bang when the newly renovated Hotel Jerome was opened and the chairlift started to roll toward Ajax Peak, 13,000 feet away, and 2/3 of a mile higher than the town. Since that time, other lifts and several other runs have been added to the original setup. Now, Aspen's skiing developments are unsurpassed in the nation.

Following this stupendous revival of the old camp, the Goethe Bicentennial Foundation sponsored an International Goethe Convocation and Music Festival there in June and July 1949 with the renowned Albert Schweitzer as the main speaker. A gigantic tent was provided and set up at the northwest limits of town to accommodate the event. In later years it has been used to house the annual musical activities of the Aspen Institute for Humanistic Studies, organized and championed by Mr. and Mrs. Paepcke but now handled by The Music Associates of Aspen, Incorporated. Its annual Music Festival has gained world-wide recognition.

In recent years one skiing event has swiftly succeeded another, and a climax was reached in 1950 when the World Ski Championship (FIS) events were assigned to the courses at Aspen. Several local youths participated in the races. Numerous competitions have been held since that time, and the annual Winterskol (started in 1950) draws many participants and observers to Aspen, providing a week of fun to all.

From success to success, Aspen has gone on and on until today it can proudly reclaim its title, Crystal City of the Rockies. However, "Crystal" now refers to snow rather than silver, and despite the old-timer's scornful remark, "We are not interested in recreation," it took just *that* to change the old mining camp to the foremost yearlong resort in the nation.

The change is miraculous. The buildings worth restoring have been repaired and in most cases the old ornamentation (gingerbread) has been retained. Many old shacks have been torn down, and they have been replaced by more modernistic structures, until there is now a mixture of old and new styles of architecture. To some this is disturbing, but to

others it is altogether satisfying—the writer being one of the latter group.

Again, life is happy, or perhaps happier. Residents are enjoying the natural wonders around them and making a living therefrom. The beautiful lavender columbines bloom on the hillsides and the multi-colored sweet peas (of which there are none finer anywhere) blossom in the gardens just as they did in the yesteryear when silver reigned as queen.

Thousands of visitors annually follow the Maroon Lake Road (for whose construction the writer worked many years) to the rugged Elk Mountains, that wonderland wherein the child of nature may find peace and contentment—a dream come true. These recreational features are everlasting or renewable and they will always be there to serve the visitor who comes to them for pleasure or for rest. Unlike the silver, they can never be mined out.

And so at long last, there seems to be an assurance that Aspen's future economy rests on a firm foundation. Therefore we respectfully salute her and her citizens and say: "All Hail! Aspen! Crystal City of the Rockies! All Hail!"

NOTICE: A new service The Green Thumb is offering members is a *Want Ad* section. If any of you need help with spring planting or garden maintenance, or for that matter in anything from renting garden equipment to selling a house—just send us the notice. Insertions are $.50 a line.

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DROUTH RESISTANT PLANTS

By LULA ROSE MORSE

EVERY gardener seeks a way to meet the challenge in the water situation and still have a colorful garden. Intriguing as are the suggestions in the seed catalogues, this year is no time to experiment with new or untried plantings. Even annuals, although they are a quick way to color, present a problem because when set out they require special watering, shading, and constant care. However, there is a way! And it has been proved. The gardener must have plans made for the areas needing annuals. Color, height, and texture will determine the flowers wanted. Seeds for these are to be purchased. A favorable day will come in early spring when the ground can be worked. The areas, even though small should be spaded or worked deep with a trowel, raked, dusted with bone meal or other safe fertilizer and raked again. Later a day will come when the earth is friable, crumbly in the hand, even though cold. Little time then is needed to sow the seed according to the plan, placing the seeds a bit deeper than usual. A light sprinkling with the watering can will suffice. There will be no shading, no special watering, no special care. Only thinning will be needed at a later date.

The essential elements in this method are: selection of flowers which will withstand the spring cold, planning for design and color, early purchase of seeds, careful preparation of the soil, and sowing the seed when the earth is friable. Later, other areas can be treated in the same manner using flowers which are less hardy.

Safe for this early planting are: cornflower, calendula, calliopsis, larkspur, poppies, and portulaca. So well do these withstand snow and freezing that they can be sown in the fall.

A general selection of plants to be considered which are drouth resistant and can be used in the conventional manner is suggested by the Home Garden Club. All daisy-like flowers seem to withstand dry conditions.

ANNUALS—petunia, nasturtium, shirley poppy, four-o'clock, zinnia, marigold, cosmos, star of Texas, sunflower, hollyhock, portulaca, iceplant.

PERENNIALS — shasta daisy, Michaelmas daisy, African daisy, tithonia, verbena, anthemas, coreopsis, achillea, chrysanthemum, Cerastium tomentosum, helianthemum.

GROUND COVER — myrtle, Polygonum reynoutria, lily-of-the valley, periwinkle, violet, portulaca, Japanese spurge, Hall's honeysuckle, thunbergia.

VINES—Hall's honeysuckle, cinnamon vine, perennial sweet pea.

TALL SHRUBS (over six feet)—tartarian honeysuckle, Siberian pea, tamarisk, common lilac.

LOWER SHRUBS — barberry, bridal wreath, flowering almond, thimble berry (native).

MARSHALL NURSERIES

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PERENNIALS THAT GROW WELL IN DENVER AND SURROUNDING AREA

With some of their outstanding faults as Garden Flowers

By HELEN K. FOWLER

BEFORE you can have a garden with dash, smartness, or gayety, you must know the plants that like to live here. After the early bulbs have gone, the Rocky Mountain columbine with its beautiful blue and white bloom starts the season in the shade. The ferns, funkia, ladyslippers, and trillium like the same environment. In the sun follows the pyrethrum, the finest of which is P. James Kelway. One of the prettiest groups I saw last year was James Kelway, backed by the light and dark blue larkspur, both being supported by a group of hybrid delphiniums.

June brings the peonies, the red stems of which are so important to the early bulb blossoms.



Hemerocallis

DELPHINIUMS. As a general rule it detracts from the grandeur of these gorgeous plants to place them among other tall-growing flowers. The whole spike should be visible, and the practice of pushing any tall plant to the back of the border where it is half-hidden is to be regretted. All borders are much improved, if, in one or two places, tall plants are allowed to come to the front; for then, instead of sloping formally like the tiers of grandstand seats, the bed has a pleasing succession of irregular bays which give a more natural and interesting appearance.

HEMEROCALLIS. We must not overlook the charm of the modern daylilies, so lately improved by careful hybridizing. If you happen to have the old number of *House and Garden* for June 1929, read the article on page 118 by A. B. Stout.

PHLOX. In July the tall phlox blooms to make the garden lovely with its pink and rose, red, and also white blossoms. One point we must keep in mind is that perennial phlox is a persistent self-sower and unless the florets are snipped off immediately after blooming, magenta-flowered seedlings will spring up in all directions. Constant, prolific flowering of these plants retards production of new rosettes at the base, often resulting in complete winter loss.

HEUCHERA. The more colorful varieties of the coral bells make excellent border plants and if the rock

garden is large, they can be used there. Some varieties are also good in the wild garden and the blooms last well when cut. Heuchera and pinks look well together in the perennial border.

PAPAVER NUDICAULE. The Iceland poppies can be raised easily from seed. They do not travel well, so it is difficult to establish them when they have to be brought from a distance; neither do they like hot, humid weather.

RANUNCULUS. The buttercups thrive in either sun or shade but must have a good watering frequently. It is better to buy the plants as it is a slow process to raise them from seed. If sown in September, germination will not take place until spring. I have sown seed in April but watering had to be watched more carefully then.

GEUM. When well established, geums grow rapidly but they must be divided every second year. While they will live in the average soil, they prefer one that is gravelly but well supplied with humus. If water stands around their roots in winter, there will be no geums in the spring.

LUPINE. This plant will not thrive in areas where the atmosphere is excessively hot and dry. They are not easy to transplant as you perhaps have found out. It is a good idea to sow seed where plants are finally desired. Are you having trouble with your lupines? Look to your soil, they do not like lime.

TUBEROUS BEGONIAS. Despite reports to the contrary, they will not live in deep shade so never plant them there; nor will they do well in continued hot, muggy weather for then they are unhealthy, have no vigor, and their buds are likely to fall.

ANTIRRHINUM. Snapdragons are often planted in perennial borders although they are biennials. Owing to the presence of rust, breeders have been developing rust-resistant strains so that today many good varieties have the added factor of resistance to this major disease.

SHASTA DAISIES. If shasta daisies tend to die out in your garden give them the same treatment as you do chrysanthemums—that is, divide them often and they will live longer.

REGAL LILIES. Owing to their great beauty and fragrance, regal lilies should be planted in every garden but they are susceptible to spring frosts especially if plants come up early during an unusually early spring. They should be protected on frosty nights. Plant on north slopes, which will help by delaying the lilies' appearance above ground.



Perennial Poppies



Violas

PYRETHRUM. This name is still commonly used in garden literature and language although the genus has long been reduced to a section of chrysanthemum. Nearly every nursery offers P. roseum and P. uliginosum. These are rather common in gardens and are known to most lovers of hardy perennials.

PRIMULA. One of the prettiest plants in the garden is the English primrose. Its culture is not the easiest, but most kinds are not difficult if given cool moisture and shade. Their soil should be well-enriched with leafmold, compost, or any well-rotted manure. Cultivation of this plant is not necessary nor even desirable, but deep watering in dry periods is most essential.

VERONICA. This genus of plants was monographed by Bentham in 1846, 158 species being then known. There are about 200 kinds known today. Bailey outlines every one and he shows a picture of V. longifolia subsessilis, one of the loveliest blues in all creation. For a low-growing blue, Veronica rupestris makes a fine showing in the border.

VIOLA. Violas are hard to raise and keep looking well in the garden. Many supposed to be perennial will not last beyond a year. There is none finer perhaps than Viola *Jersey Gem*.

TRITOMA. I heard something about the red-hot poker the other day. There is a new super hardy one which can be grown for years and years without either winter or summer protection. Here is what its growers claim for it: "It takes the coldest winters, the hottest summers, burning sun, and wettest of rainy spells, alternate freezing and thawing—thriving in it all." The flower stems are sturdy and succulent. They

are thick and will provide water in such quantity to the flower head that they last for weeks after cutting.

Do not try to do much with yarrow for it is weedy and hasn't a particle of refinement! Not much can be said about the verbascums either—they are certainly not desirable for small gardens for they hybridize and self-sow and this is always a nuisance. Do you like the species tulips? In the first place do you know them? Tulip clusiana and T. fosteriana and others? If conditions like their original home are provided they will often last longer than the hybrids.

DICTAMNUS: About the gas plant's only drawback is its tendency to sulk for a time after planting. It may be a couple of seasons before it settles down and seems contented.

TROLLIUS. The globe flowers are usually easy to grow, free from pests and diseases, and showy in their yellow flowers. They are winter hardy in Colorado and will do well in soils which are thought too moist for most other plants.

HELENIUM, HEDIOUSIS, HELLANTHUS: All these plants have yellow flowers and are so vigorous in growth that they must be planted only in large, informal borders where they will not dwarf or detract from more refined plants. In placing, the colors must be carefully considered or they will throw the whole color scheme off balance. In planting Iris pumila you may place them in any soil rich or poor, sun, or shade.

These then, are the plants that like to live in Denver and its environs. Hire a landscape artist who knows the proper plant association to beautify your garden. In most gardens where you look for a ground cover you will find only lilies-of-the-valley. This is unquestionably due to a lack of knowledge of the other fine ground covers such as ajuga, vinca, anemone, Polygonum reynoutria, etc.

Be happy in your garden this year for "The glory of the garden, it shall never pass away."

SECOND ANNUAL GARDEN WORKSHOP

Will Be Held at Phipps Auditorium at City Park

Saturday, April 14th, Beginning at 9:30 A.M.

Theme of This Year's Workshop Will Be

"THE WEEK-END GARDENER"

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THE BEST EVERGREENS FOR HORTICULTURAL USE IN THE ROCKY MOUNTAINS

By ROBERT E. MORE

IT is not easy to name the best plants for an area. Eliminating those that are tender or half hardy is not difficult; but to select from the hardy species those that are "best" involves taste and personal opinion. To furnish flexibility in this respect, I am following the practice adopted by Dr. Donald Wyman in his "Trees for America," and am submitting a preferred list and a supplemental list.

Of course any list of evergreens must be set up according to sizes. Having eliminated all climatically unadapted evergreens, size probably constitutes the most important medium of classification. Color and texture both must be inquired into, but fundamentally, ultimate size and rapidity of growth are the two primary considerations. We shall, therefore, discuss our hardy evergreens with respect to ultimate height and spread, and rate of growth.

Creepers

Ten years ago, creepers were found in botanical gardens only. Pfitzer, savin and tamarix junipers were suggested by landscape architects and sold by nurserymen as "low foundation plants." Comparatively, they were. But the grounds about ranch style houses that were landscaped 10 years ago—and especially those that were planted 20 years ago—are grossly overgrown today. And today, the informed landscape designer places creepers under windows and dwarf creepers in the rock garden.

Nurserymen offer two dwarf creepers for the small area or the rock garden. and two that grow more vigorously, for the location that demands an evergreen that will always be less than a foot in height. The BLUE WILTON CREEPING JUNIPER (*Juniperus horizontalis* Blue Wilton) and the GLENMORE CREEPING JUNIPER (*Juniperus horizontalis* Glenmore) are the lowest growing and the slowest growing of all. Glenmore creeper is dark green and pistillate, and thus has berries. (Most junipers bear staminate or male flowers on one plant and pistillate or female flowers on a different plant. Only the latter bear berries. Most people prefer berry plants. Many junipers offered in the nursery trade are propagated from grafts or cuttings rather than seed. A grafted tree is an exact replica of its parent. Hence grafts from a staminate parent, like the pfitzer, will all be staminate, whereas grafts from a pistillate plant, like Glenmore creeper, will all have berries.) Blue Wilton has a fine silver color. My plants have not produced berries thus far, but may as they get older. *See illus. p. 39.*

The MARSHALL CREEPING JUNIPER (*Juniperus horizontalis* Marshall) and the ANDORRA CREEPING JUNIPER (*Juniperus horizontalis plumosa*) grow a little faster than the preceding and will ultimately cover an area 10 to 15 feet in diameter. The Andorra, turns a lovely plum color in winter, but does not wholly relish exposure to south and west sun and winds, from February to May. The Marshall is pistillate, and the Andorra is staminate. *See illus. p.38.*

Low Spreaders

A hardy evergreen between 12 and 24 inches in ultimate height is a "must" in every landscape design. SARGENT CHINESE JUNIPER (*Juniperus chinensis sargenti*) and two of the Russian savin junipers, namely BROADMOOR (*Juniperus sabina* Broadmoor) and BUFFALO (*Juniperus sabina* Buffalo) give us splendid plants of this size. Sargent will never get over two feet in height. It has berries. Broadmoor will be under 24 inches in height for many years. It is staminate, and looks like a dwarf, refined tamarix juniper. It was formerly called "Russian Savin No. 4." Buffalo is pistillate and bears berries early. It, too, is one of the Russian savins and has about the same growth habit as Broadmoor. It is a striking light green. Cutting the long tips of these two evergreens improves them.

Large Spreaders

These should *not* be used as foundation plants, except around apartment houses, hospitals and industrial buildings—unless the owner has the fortitude to replace the plant in about 5 to 7 years. And that is a practice that is being followed more and more. We repaint our house—at a substantial cost—every 3 to 5 years. Our rugs wear out and so does our furniture. If plants are treated as temporary, outdoor facilities, and are amortized, then our scope of planting material is immeasurably enlarged. A blue spruce or concolor fir, both of which get out of scale in 10 years when near a ranch style house, can both be used, if we replace them when they get too large. Any of the group now being discussed will make perfect foundation plants for 5 to 10 years. This is sound landscaping—if they are then replaced; otherwise, as stated, do *not* use them for foundation planting.

The best known and most frequently sold juniper in this group is the PFITZER (*Juniperus chinensis pfitzeriana*). Virile, tough, virtually pest free and always picturesque it has a place in almost every plantation. A visit to the Broadmoor Hotel in Colorado Springs discloses that in 20 years the pfitzer will grow 12 feet high—if placed against a building—and spread out for 20 to 25 feet. It is fast growing, 15 inches a year, and should never have its tips barbered into "burr" cuts. Its irregularity is its glory. *See illus. p. 22.*

Even faster growing is the VON EHRON (*Juniperus sabina* Von Ehron). It forms a somewhat regular vase, with sharp spikes reaching for the sun. Both pfitzer and Von Ehren have no berries.

TAMARIX JUNIPER (*Juniperus sabina tamariscifolia*) also has male flowers only. But it does not need berries, for its color, texture and growth habit make it one of the finest horticultural gems available to Rocky Mountain plantsmen. Tamarix in 12 to 15 years, will be perfectly symmetrical half moon 4 to 5 feet high and 8 to 10 feet in diameter. Its feathery, gray-green recurved plumes, all geometrically placed, make it indispensible to every home planting. Plant it 6 feet inside your street walk, and 6 feet to the side of your entrance walk.

TABLE TOP and COMMUNIS TYPE JUNIPERS (*Juniperus scopulorum* Table Top and Communis Type) are two fine large spreaders. These are grafts (clons) of our native scopulorum juniper. Possibly they have been confused with one another. My first specimens showed Table Top as staminate and Communis Type as pistillate. Later purchases of Table Top, however, had berries. To be sure of a berry plant, order Communis Type. These trees will grow 7 feet high and spread 12 feet. Each is a fine blue. *See illus. p. 39.*

MUGHO PINE (*Pinus mughus mugo*) can be kept in bounds for 12 to 15 years by regular shearing. This will, of course, provide a formal plant. It is subject to scale (spray in early April with lime-sulphur) if soil or maintenance is lean. Prune it in the spring with hedge shears, taking off 90% of the new growth.

Medium Sized Upright Trees

This group will attain a height of 10 to 15 feet in 12 years, and 35 feet or better in 20 years. It has been estimated that the average home owner occupies a house from 10 to 15 years. Landscape architects adopt 12 to 15 years as the horticultural period the new home owner should contemplate. This group of evergreens, even though planted close to a ranch style house, will keep in scale at the corners of the house, for that period. They furnish with creepers in-between, the backbone of the average home landscape plan.

Most popular are Rocky Mountain juniper (*Juniperus scopulorum*) and eastern redcedar (*Juniperus virginiana*). Both of these species are quite variable from seed, so nurserymen have perpetuated the better types by grafts. During the last five years, every nurseryman seemed to feel he must have his own graft, and they are becoming as confusing as are the rose clons. The following are generally accepted among nurserymen as being among the better:

Juniperus scopulorum clons:

GRAY GLEAM—Plant patent No. 848. Introduced by Scott Wilmore of Denver. Silver lavender color and slender form; bears berries when mature; a superb tree.

MOFFET—Fine blue, berry tree. Perhaps the hardiest of all and the easiest to transplant.

PATHFINDER—Spectacular blue; staminate.

MADORRA—Two types of foliage on the same tree; fine and unusual.

SUTHERLAND—Rather slender, dark green berry tree; tough. *See illus. p. 40.*

COLOGREEN—One of the finest greens; excellent texture; berry tree.

Juniperus virginiana clons:

DUNDEE—Compact, dense foliage, turning an arresting plum color in winter; staminate; probably the most popular redcedar.

CANAERT—Dark green, covered with tiny, light blue berries; gets straggly unless regularly sheared.

Unfortunately both of these species of juniper must be *regularly* sprayed for aphis and red spider. In the nurseries they are usually given a spraying in late March while still dormant, and at least one more treatment during hot weather. Spraying Rocky Mountain juniper and eastern redcedar is as necessary as watering, and should be viewed as a routine incident of ownership. During an unusually wet spring they may suddenly develop jelly-like orange-yellow masses in the branches. This is a rust that comes from a nearby member of the apple family, usually a hawthorn. One of the new antibiotics holds promise of control. Prior to this, the homeowner had to choose between hawthorns and junipers. The two hosts are necessary to the life cycle of the rust, so eliminating hawthorns will end the juniper blight.

Eastern redcedar is not hardy in the Colorado mountains.

Juniperus chinensis clons:

KETELEER—Rather open, dark green foliage, with the largest berries of

any juniper offered commercially. *J. Chinensis* is not subject to the cedar-apple rust, as are *J. scopulorum* and *J. virginiana.* A splended variety.

AMES—Heavy, dark green foliage. A new offering and a good one.

MANEY—Like Ames, a valuable seedling variation of *J. chinensis sargenti.* Bushy.

Other erect growing chinese junipers seldom look well groomed. Dead needles are held for many years, giving the tree an unhealthy appearance.

The ONESEED JUNIPER (*Juniperus monosperma*) and the Utah juniper (*Juniperus utahensis*) are two tough Colorado natives that do not require spraying. Oneseed juniper is yellow-green in cultivation, bushy and an admirable screen plant. Utah juniper is often a nice gray when young, and usually lacks the many stems of cousin Oneseed. The foliage on each is coarse and, when they are growing vigorously, very prickly. *See illus. p. 41.*

Two, slow growing native pines are also used for screens and barriers. BRISTLECONE or FOXTAIL PINE (*Pinus aristata*) and PINYON PINE (*Pinus cembroides edulis*) are offered by all Colorado nurseries. Once established, each is virtually indestructible. The foxtail is sometimes difficult to transplant, perhaps because it is seldom grown from seed but is usually collected from rocky slopes at an elevation of 9000 feet. No tree is more picturesque, and it is worth replacing several times, in order to get one started. The pinyon seldom gives trouble. *See illus. pp. 43-45.*

Large Trees

All of these will "outgrow" a small house in 12 to 15 years. And when they are magnificently healthy and beautiful, it really does take will power to remove one. Countless Blue Spruces are, however, completely out of hand in every Rocky Mountain city. It is suggested, therefore, that use of these large trees be restricted to large houses in spacious grounds.

A large tree that "has everything" is the WHITE or CONCOLOR FIR (*Abies concolor*). The magnificent specimen shown in the illustration, which has *not* been sheared, is in Observatory Park at Denver University. Its soft long needles, grayish-blue color and symmetrical formal growth habit have made it a favorite throughout the world. It will stand sun or shade, is not fussy in moisture requirements, and is seldom subject to disease or pest. *See illus. p. 46.*

The COLORADO or BLUE SPRUCE (*Picea pungens*) is, perhaps, the most famous specimen tree in the world. It has become somewhat a vogue to depreciate this tree as "too striking," "too colorful." Possibly these writers would vote against Miss America, because "too beautiful." The blue spruce must, of course, be fitted into an harmonious design, and should not be used to excess; nor should any other plant. *See illus. p. 31.*

The LIMBER PINE (*Pinus flexilis*) is another Colorado native that deserves highest rating. Not as tall a tree as the others in this group, it can be further retarded by clipping its "candles" (buds) when they elongate in the spring just before sprouting needles. The tree shown in the illustration has a six inch trunk and is almost twenty years old. By cutting off half of each candle each spring it has been both retarded and made much fuller.

AUSTRIAN PINE (*Pinus nigra austriaca*) also should be used more than it is. Its handsome gray bark, brilliant dark green needles and its ability to hold its lower branches, make it a national favorite. It does not like the

mountains, however. There use ponderosa pine, described in the supplementary list. *See illus. p. 44.*

Supplementary List

As previously noted, eastern redcedar is not happy in the mountains. With this exception, all of the following trees are completely hardy any place in the Rocky Mountains. The tree lists of others would include some of them in the preferred list. Certain of them, such as dwarf japgarden juniper, are more striking in appearance than those described heretofore. But a slight susceptibility to winter injury makes the plant last mentioned not quite as desirable, in my opinion, as those in the preferred list. The evergreen collector should, however, have all plants in both lists.

Creepers

DWARF JAPGARDEN JUNIPER (*Juniperus procumbens nana*)—Attractive gray; quite slow growing; the foliage arrangement suggests a nest of stars; staminate.

ADMIRABILIS CREEPING JUNIPER (*Juniperus horizontalis Admirabilis*)—Like Marshall creeper in appearance and growth habit, but staminate.

FILICINUS CREEPING JUNIPER (*Juniperus horizontalis Filicinus*)—Very low and slow growing; delicate foliage; not robust; staminate.

Low Spreaders

Native COMMON JUNIPER (*Juniperus communis saxatilis*)—Keep in full shade and it will not brown in winter; awl-like green foliage, silver on the under side; get a pistillate plant.

PLUME PFITZER JUNIPER (*Juniperus chinensis pfitzeriana plumosa*)—Compact, slow growing; staminate.

ARMSTRONG JUNIPER (*Juniperus chinensis Armstrong*)—Yellow green, rather fine foliage; staminate.

Large Spreaders

KOSTER EASTERN REDCEDAR (*Juniperus virginiana kosteri*)—Lower growing and bluer than pfitzer, but otherwise similar in appearance; branches brittle; staminate.

BLUE HETZ JUNIPER (*Juniperus chinensis* Hetz Blue)—Fast growing, pistillate; cut back branches somewhat and a better shape is obtained; nice blue color; not quite as robust as pfitzer.

ARCADIA JUNIPER (*Juniperus sabina* Arcadia. Formerly "Russian Savin No. 3")—Yellow green, pistillate, smaller than ordinary savin, and not as erect.

SAVIN JUNIPER (*Juniperus sabina*)—Sometimes pistillate; handsome when at its best; often gets leggy with age.

Medium Sized Upright Trees

SWISS MOUNTAIN PINE (*Pinus Mughus*)—Multiple stems usually and almost as broad as high.

Rocky Mountain Juniper Clons (*Juniperus scopulorum*):

MARSHALL—Blue pistillate tree; rather open foliage.

DEWDROP—Two types of foliage; unique; staminate; sometimes hard to transplant.

HILL SILVER—Pistillate; fine silver color.
SILVER GLOW—Another fine pistillate silver.

Eastern redcedar clons (*Juniperus virginiana*):

SILVER—Wide branching, subject to snow injury if not vigorously pruned; fine silver; pistillate.
PYRAMID—Fine form and color.
SCHOTT—"A light green canaert."
GOLDTIP—End of branchlets gold in spring; a novelty.

Probably the following (they are still somewhat experimental):

SWISS STONE PINE (*Pinus cembra*)—Fine color and shape, soft needles (five) slow growing; seems to be hardy, though wants acid soil and probably some protection from spring sun and winds.
MACEDONIAN PINE (*Pinus peuce*)—Looks and grows like Swiss stone pine; apparently very hardy; less susceptible to white pine blister rust than any five needle pine.

Large Trees

PONDEROSA PINE (*Pinus ponderosa scopulorum*)—Colorado foothills tree; rugged and handsome; wants sun and elbow room.

SCOTS or SCOTCH PINE (*Pinus sylvestris*)—Open growth, two rather short, light colored needles in bundle; top of tree trunk a light brown.

BLACK HILL SPRUCE (*Picea glauca densata*)—Dark green, compact; excellent for hedge; slower growing than Colorado spruce.

DOUGLASFIR (*Pseudotsuga taxifolia glauca*)—Graceful shape, doesn't like southern exposure; alternate host for aphid that disfigures tips of spruce in spring; do not plant spruce and douglasfir close to each other.



Glenmore Creeping Juniper—Rock Garden Gem



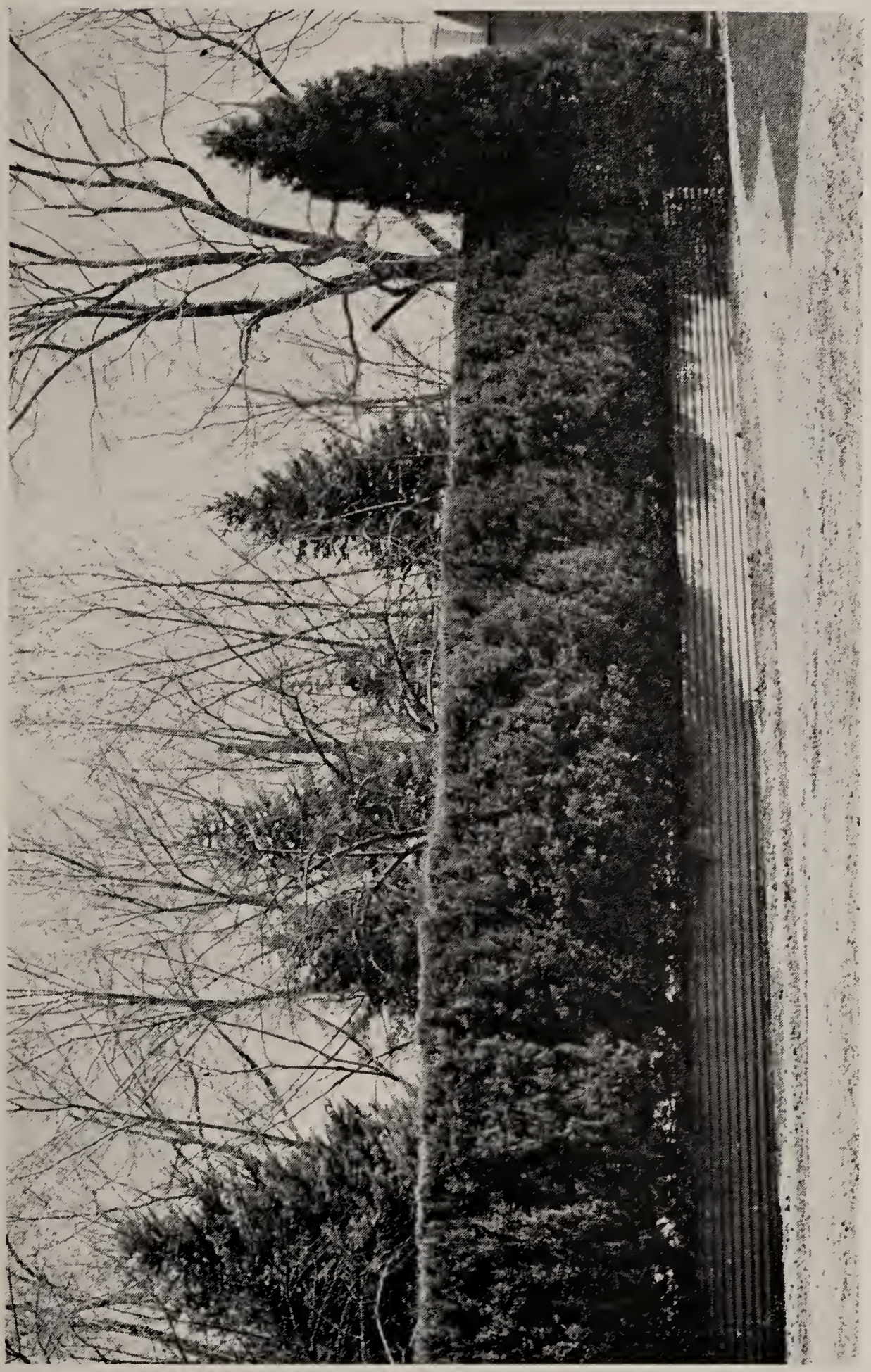
Andorra Creeping Juniper



Table Top Rocky Mountain Juniper—Fine Larch Spreader



Sutherland Rocky Mountain Juniper



Hedge of Oneseeded Juniper



Pfitzer Juniper, 25 Years Old, 12' by 20'



Bristlecone or Foxtail Pine, Slow Growing and Picturesque



"Candles" on Regularly Pruned Limber Pine



Pinyon Pine Furnishes a Medium-sized Tree. Suitable Also for Screens.



White Fir, the Best Large Evergreen.



Sketch recreating a view of the Hotel de Paris in its heydey, 1875-1900. A cast and gilded statue of Justice with her scales surmounts the roof. An elaborate iron railing adorns the second floor. The crossed flags of the French Republic and the United States were painted on the west wall.

A FRENCH HOTEL IN THE ROCKIES

By CHARLOTTE A. BARBOUR

THE very presence of the Hotel de Paris in Georgetown, Colorado has a touch of magic about it. To find a perfectly preserved example of a French provincial hotel in the midst of the Rocky Mountains is an intriguing experience—much as if one found an Italian village in Illinois! The story behind the hotel is also fairly incredible in its chain of circumstances.

In the middle of the last century a Frenchman, Adolf Francois Gerard, alias Louis Dupuy, arrived in this then flourishing mining town after a hectic, though short, career of varied ventures and adventures. Gold, as usual, was the lure, but following a mine accident, this young stranger had to find another means of livelihood. Had he not at one stage of his wanderings been apprenticed to a chef in Paris he would not have been able to set up a bakery and would probably have drifted away from Georgetown.

Louis Dupuy's Boulangerie prospered however, to the point that he accumulated enough money to build a small hotel. He had certainly no local model to follow for this structure, so evidently he drew on his memory of his father's auberge in Alencon, France. When finished in 1875, the entire premises from the gilded pewter statues on the rooftop and the courtyard walls, to the winecellar



The Hotel de Paris at Georgetown, Colorado, as it appears today. It is constructed of stone with a stucco overlay. The severely plain exterior conceals a wealth of fascinating and interesting objects within. Run as a State Museum by the Colonial Dame Society of Colorado, it is open daily during the summer season from 8 A.M. to 5 P.M. Hostesses are on hand to explain the history of the hotel and its founder. Admission 25 cents.

or cave in the basement, had been created in a perfect French pattern.

The entrance gave directly from the street into the dining room, an imposing room big enough to cater not only to the Hotel guests but also to the townspeople who could come regularly for meals or a glass of wine. Behind the dining room was the equally large kitchen where Dupuy, who was his own chef, concocted his gastronomic marvels. Not only was he a master cook but a dietician of repute as well. He was aware of the health value of properly combined and well cooked foods when that subject was in its infancy —at least in the wild west.

Upstairs were ten highceilinged bedrooms of goodly proportions; one actually with connecting bath for Dupuy was also a pioneer in running water and steam heat albeit in primitive shapes.

Flanking the dining room were, on one side, two large and commodious parlours with elegant woodwork and furnishings, and on the other, Louis' own private suite—library, bedroom and bath—only entered by the chosen few.

He was a man of such pronounced character that he could not fail to have eccentricities. One was his dislike and mistrust of women. Ladies alone never penetrated the hostelry. Accompanied by husbands they could and did stay there, their needs being cared for by Tante Sophie Gallet, the Housekeeper. Another peculiarity was his fetish for bathing in the mountain stream the year round. This actually caused his death in 1900. But he left behind him a famous mecca for the gourmets and the intelligentsia from far and near.

Dupuy's collection of books, both French and English, show a man of



One of the small enclosed courtyards leading off the kitchen. It was originally graveled. The gilded stag is poised on the wall in the center and at either end of the balustrade is a cupid bearing aloft an urn—all in the best Victorian tradition. This courtyard will be edged with yellow bush roses and climbing vines.

wide intellectual interests, with a slant toward free-thinking. His collection of prints, etchings, and objets d'art show a cultivated taste and a desire for the best; the mirrors were backed with diamond dust and the shades on the chandeliers were Waterford glass. Throughout the building, the furniture, the curtains, the carpets, late-Victorian in style though they were, composed a solid, comfortable, and strangely restful interior.

One could use the present tense rather than the past for this description of the Hotel de Paris since today it remains virtually unchanged. How is this possible in such a fluctuating world? It is probably due to another link in a chain of circumstances. After Dupuy's death the property was acquired by another Georgetownite, a Mrs. Burkholder, who continued it as a hotel. Years passed and Mrs. Burkholder's daughter, Mrs. Hazel McAdams, came there to live. For twenty-five years she held and treasured the relics and possessions of Louis Dupuy.

Other ancient buildings in Colorado were either looted, torn down, or destroyed by fire. The Hotel de Paris has met a kindlier fate. As the last link in the chain, the Colonial Dames Society of Colorado took it over in 1954 and has restored it room by room and detail by detail to the days of its fame—1875 to 1900. It is now a State Museum and one can truthfully say that it is a "museum piece"!

There seems to be no record of Dupuy as a gardener though we know that he raised and used culinary herbs. But the two small courtyards leading off the kitchen are open to the sky and are now used in summer

to hold tables where tea, coffee, and patisseries are served. This spring they are to be border-planted in a manner as faithful as possible to the traditions of French courtyards as well as Georgetown horticulture. At 8000 feet, where it is either July or winter, the choice of material is limited. Yellow roses (Hugonis) have proved themselves already. Hardy crabapples will grow. Engelmann and English ivy survive. Delphiniums flourish. Elderberry shrubs are tolerant. As much as possible, "inanimates" will be featured to give decorative effect, to cut down on maintenance, and to avoid plant casualties. Wall brackets for holding flower pots, urns for more potted flowers, cobblestones interspersed with herbs and hardy ground covers will help accomplish this. The object of the planting is to provide a simple, old-fashioned, and cheery adjunct to this amazing building.

THE CENTRAL CITY OPERA HOUSE GARDEN

By KATHLEEN MARRIAGE

Since Mrs. Marriage wrote the following article way back in July of 1946, the Opera House garden has continued to flourish, still under the able sponsorship of the Garden Club of Denver. Each year a few new things are added including a new garden south of the Opera House between it and the dressing rooms of the players. This garden was given by Mrs. John Anthony Crook in memory of her daughter.

These gardens of Central City are in the old tradition, featuring yellow roses and native plant materials so that visitors may see what can be grown at high altitudes, while enjoying the fresh mountain air and lovely setting in Colorado's unique Central City.

WHEN those Cornish miners built the Opera House in 1878 we wonder what they planted in the surrounding grounds? Did they suggest to Tom from Trebarfoot and to Larry from Launceston that when they set out next year for the U.S.A. they bring with them beeches, oaks and firs from the groves on the Cornish tors, polypody ferns from the Camelford roadsides and daffodil bulbs from the Lanlake streamsides?

However beautiful they made the grounds, the lapse during "ghost town" times brought an era of neglect in which any original planting died, dead as Queen Anne; so when the new Opera House Committee took over, the occupants of this garden were chiefly dumps and rubble, tin cans and old bottles.

Miss Anne Evans, co-originator of the Opera House revival, realized that however attractive the interior of the Opera House the grounds were nothing to be proud of. So, a week or so before the first grand opening, she interested two men in improving this area. These two "builders of beauty" had energy to add to their discrimination. Up they went to Central City, set to work, and soon all the lower area near the street level was cleared of unsightly debris. Now what to mitigate the startling bareness? It was mid-summer so no tree planting was possible. They interested the local Forest Service who gave them a truck load of cut pine trees. These were fastened to Christ-



A typical street scene in Central City from an original pen and ink sketch by Virginia Senna.

mas tree stands, then the stands buried. Overnight here was a grove of evergreens that did wonders to improve appearances during that summer's Opera season.

Next year what to do? Operatic producers and their assistants don't concern themselves with any scenery except such staging as may be painted, erected, and removed at will so the

committee bumped up against another opera season with ground still bare. Again these same two men buckled to and transplanted from a "sample house" on display in Denver, shrubs and trees left when the house was removed—spruces, lilacs, spireas, and other shrubs in full leaf. Their thumbs were the right color for everything survived and once again the grounds were presentable. The two energetic friends in need? Mr. George Kelly and Mr. Walter Pesman.

The Garden Club of Denver, reflecting the glory of the Garden Club of America in its public spirit, took it over as their job to provide a long range plan for the whole garden—hillside included—and to plant towards this plan each spring.

The first such planting was begun at the street level working back towards the rugged steep hillside. Spruces by the high blank walls serve as background for gay flowers, such sturdy fellows as: Anchusas dropmore and A. barrelieri, Iceland poppies with their numerous progeny, Centauera macrocephala, Rocky Mountain blue columbine, Anthemis tinctoria, Campanula glomerata and Achillea Cloth of Gold.

On this rocky hillside and at this altitude, 8,500 feet above sea level, only the hardiest things are worth planting. By the steps which lead up the hillside are sedums, linarias, penstemons, and such others as will hang on by their eyebrows.

When, more or less breathless, we arrive at the top step we are rewarded by the welcome sight of a seat of rough stone amidst a group of foxtail pines, with a level paved area, a little retreat built in memory of Miss Anne Evans.

In anticipation of the reopening of the Opera House after war's hiatus, more of the plan has been carried out. The planting was continued this spring with foxtail pines on the hillsides and spruces on the lower level, under the enthusiastic sponsorship of the Garden Club of Denver.

The first pitchblend used by Madam Curie came from Central City.

Mr. Clyde Learned, recently elected to the Board of Trustees, deserves a hearty three cheers, we feel, for he has already brought in some eight new members! So far that's the highest number turned in by any one person in the race for new memberships. Remember! There's a special prize for the person who brings in the highest number—so, Vamonos Amigos!

Most of our TREES, SHRUBS, EVERGREENS, VINES, and PERENNIALS are in now. We now have a very extensive and complete line of material which is fresh and full of life. The sooner you get it and plant it back in the soil the better it will grow, SO Come and Get It NOW!

COTTONWOOD GARDEN SHOP

4849 S. Santa Fe Drive *George and Sue Kelly*



Sketch of the proposed Box Canyon to be built in the Botanical Garden in City Park.

THE BOTANICAL GARDEN WILL HELP YOU RECOGNIZE PLANTS

By M. WALTER PESMAN

"WHAT was that white rose I saw in the foothills?" "Are your white birches in the mountains like the New England ones?" "I wonder if I could grow Colorado alpines in my rock garden?"

These are some sample questions that our botanical garden hopes to answer in the not-too-far future. In other words, a grouping of plants, natives of the Rocky Mountain region, is in the offing and plans are being worked on for a striking display—canyon and all—with running water, cacti, squaw apples, little red elephants, and what not. If carried out successfully, it will be unlike any other botanical garden layout.

Yes, it will be difficult, but it will be worth while. Two main purposes are coming to mind:

1. Helping tourists and home folks to recognize native plants they see in the wilds.

2. Showing them how some natives can be used in home landscaping.

Carried out properly, we must find an easy way of recognizing the trees, shrubs, and wildflowers that have intrigued us, verifying their name, both common name and scientific moniker, and a few interesting items about them. That should have a good bit of appeal.

Botanic gardens of yesterday and today have hit upon at least three different methods, which we might call the *plant family way,* the *nature-way,* and a *realistic* sort of *compromise,* described below.

The plant family way is the time-honored one, followed in all older botanical gardens. Such a plant collection shows one or more specimen plants in separate plots, arranged in what is called the taxonomical system: all of the mustard family together, all of the rose family combined, all of the sunflower family neatly grouped in their subfamilies, genera and species, but in one large unit. Going through such a collection is like reading a botany book, with the fun of actually seeing the plants grow. It is not too easy to do. In the Pea family, for instance, we find shrubs like pink locust and indigo bush closely related to perennials like lupine and golden banner, and to vines like wild sweet peas. Sizes, in other words, vary much. Just as difficult is it to find marsh plants and desert plants closely related, but refusing to grow in similar conditions.

With all that, it would be helpful to have at least a small collection of the more common native plants arranged by family, and carefully labeled.

The *nature way,* or ecological system carried out in some of the most forward-looking botanic gardens, is the ideal system. It means that a number of "wild gardens" are set aside in nature, just as they grow under normal conditions. To begin with, this would mean a number of plots at different altitudes, some above timberline, some in the plains, two or three half way between. There would be different exposures, a variety of moisture content in the soil, and a plot for alkaline plants. The Schynige Platte Botanic Garden in Switzerland is a splendid example, located as it is in full view of the majestic Jungfrau mountain. Our Denver Botanic Garden could have (and will have in the future, I am sure) a number of sub-stations at various altitudes. That sort of an arrangement will act as a magnet for a host of students of our wonderful flora, attracting scientists from all parts of the globe. But it will also act as a series of outing places for lovers of nature. And it will be a chance to preserve some of the rarest native orchids and gentians among others. (Oh yes, these plots will have to be fenced and admittance arranged for.)

Eventually this dream will come true, I am sure, as people see what an important and comparatively easy thing it is to have, once the land has been donated or bought.

A good compromise for the beginning would be the following: 1. One plot just at timberline with the proper topography which could possibly show off plants both of the alpine zone above timberline (say on a windswept top), and of the subalpine zone with plants that like wet feet, cold water, semi-acid soil, and the shelter of high altitude evergreens. This plot would be a mecca for lovers of alpine plants, ("belly-plants"), and lush subalpine vegetation.

2. A foothills and montane zone which could be combined at the right altitude if there is a variety of slopes, running water, and a good outcrop of

rocks. This would accommodate sun plants, shade plants, etc.

3. A fairly level piece of ground near Denver could have both desert plants, alkali-lovers, hardy shrubs, and trees, and the choice plain flowers. Some of these could be brought in from the Western Slope, some from the eastern plains, and some from as far as New Mexico and Utah. What a chance to show the variety of good-looking native plants that can be used in our gardens once nurserymen get to know them!

Until such a time that this dream materializes, we can make a good beginning by providing a setting that will accommodate a fairly large number of outstanding native plants. Some of these may have to be petted along even though irrigation provides similar growing conditions to those found only in high altitudes. Running water can be had by being pumped up and allowed to flow down along a naturalistic creekbed. Desert plants grow on a south slope and many foothills' shrubs will feel at home in Denver if given a cozy rock cleft, for instance. Even high altitude plants may be grown in a few spots where moist shade coaxes them along. Peatmoss can imitate the forest mulch, and in a few spots a fine sprinkler head may provide the moist atmosphere of subalpine glades. All this, of course, means that the gardener in charge must have the proper "feel" for his native plants. A plant by its very behavior often predicts its own fatality, if you can read the signs.

An attempt to "do the impossible" is in the making. Plans for a "box-canyon" layout are on the board, and may soon go into effect. Water will be pumped from a low spot in the park, thus saving some precious maples and other trees, and incidentally furnishing "new water". East, south, and west exposures are being studied for the welfare of different types of plants.

A bold dream? Yes, it is, but as the saying goes, "with the proper will the difficult can be done now, the impossible takes a little longer!" Colorado has done many things that "couldn't be done."

And since we are dealing in dreams anyway, how about a conservatory that'll grow cold-weather plants instead of tropical plants. The present systems of air-conditioning can provide almost any climate that you desire. We might imitate the top of Mount Evans right inside a properly mechanized conservatory. We can even install the proper ultra-violet light to make these little plants feel at home. How would you like to watch the alpine forget-me-nots growing right in Denver, together with alpine spring beauty, moss campion and Whitlow wort.

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PATIO PHILOSOPHY

By SAM L. HUDDLESTON, *Landscape Architect*

IN their own time all places eventually develop their own culture, in landscape architecture as in the various other arts. We in this part of the west have yet to come up with anything that in itself says "This is Colorado!"

California, home of the modern patio and the only comparable region, age-wise, has pulled away from the established eastern and southern tradition and has a firm start on a distinctive culture of its own. Contemporary California design in gardens, architecture, ceramics, and sports clothes is fast becoming a cultural example well worth emulating.

In this climate capital of the world, we need to realize as California has, that the back yard concept went out with the stables and chicken yards that used to be part of it and that outdoor living, at home, is a new horizon in daily life.

The landscape development of the modern home should be an effort to develop a garden unique to Colorado. A garden to fit our needs in this particular climate, at this elevation, latitude and longitude, and a garden to fit our small but distinctive space in the scheme of things.

In the garden facet of this total culture, the patio will be the heart. Is it to be expressive perhaps of our cattle country background and devoted to the barbecue rather than the mint julep? Located on the southwest to trap the sun in the cool months? Deciduously shaded from the hot summer sun instead of on the north as in the mint julep country where the sun is a menace not to be trapped? Space in quantity to express this region of unlimited space? In detail expressive of mountain rock, wind, sun and sky and not low level seaside or moist Magnolias?





Patios are more than a type of pavement; a type of screening for privacy and against the wind; a type of outdoor furniture. In the garden, the patio is usually the link between indoors and outdoors and the heart and control center of the garden. The place most used and most enjoyed from which the lawn, plantings, children's and adult's play yards fan out and from which the service yards are screened.

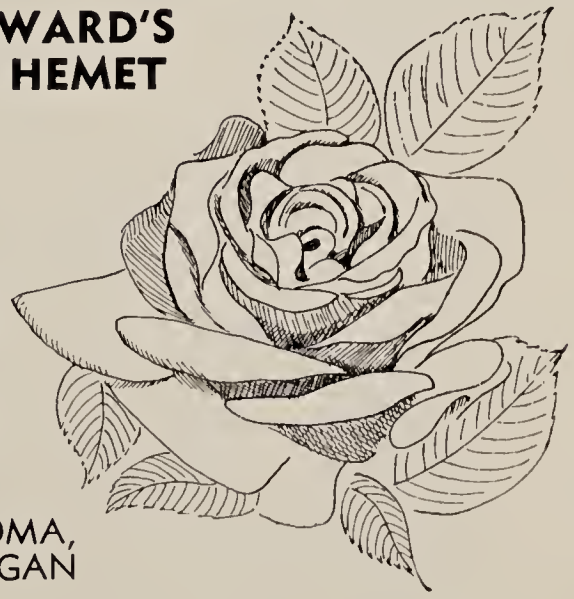
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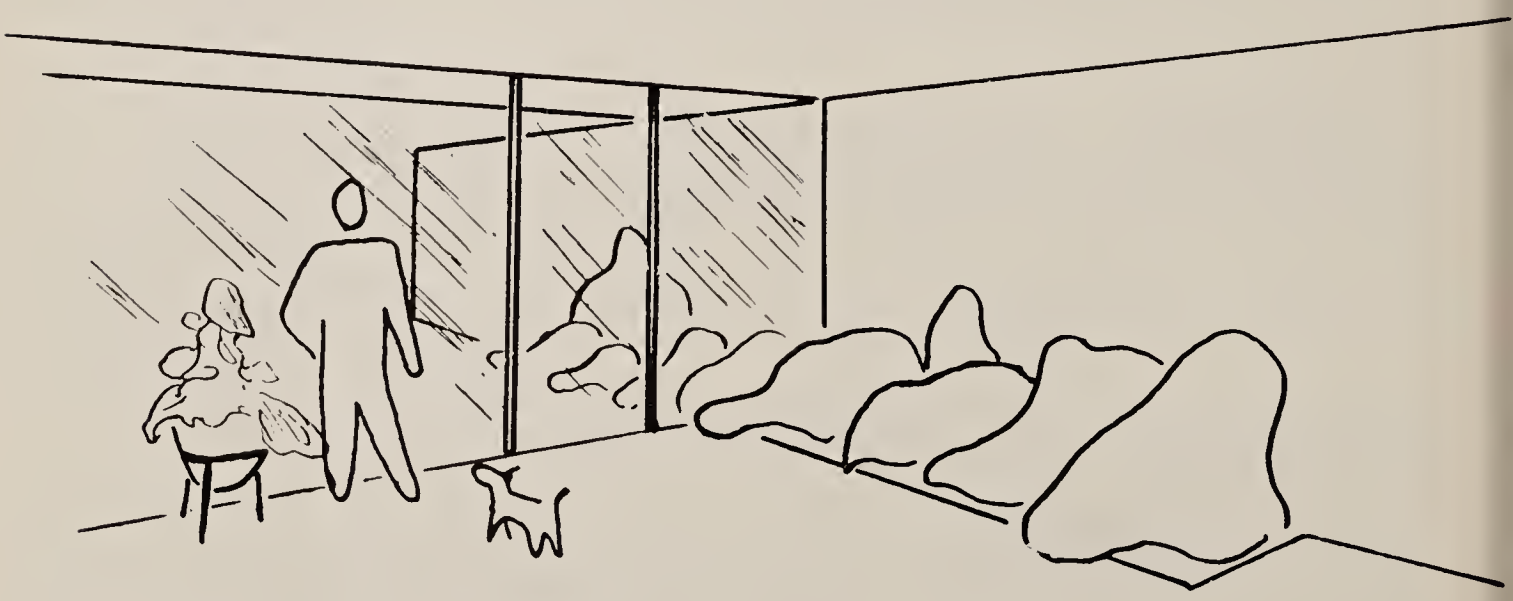
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INDOOR-OUTDOOR RELATIONSHIP

By CURTISS POLLARI

ONE aspect of modern day living, as concerns house and garden, is that of indoor-outdoor relationship. It is mainly a psychological force by which we experience greater spacial areas than actually exist. This relation of house to garden is better achieved today than formerly because of new methods and new materials in the building field. Glass is the all important "key" to this modern day phase of living. With a curtain of glass to replace a solid wall, the problem of gaining this added space and relating it properly to a given room of the house is lessened considerably. Now that we have walls of glass with which the area outside of the house can be seen, we have the problem of getting the proper relationship between the two factors. There are two principles that can be utilized. With the first principle, use of mass, it is possible to achieve interior-exterior relationship. By mass is meant area. The interior wall will be thought of as a mass. The floor of a room or paving of a terrace, also shrubbery or groups of plants indoors will be thought of in the basic sense of mass. Thus by using a "mass" of foliage indoors and a "mass" of foliage outdoors we get a sense of continuity. Plants are of course only one material that can achieve or assist in achieving this relationship. Other types could be materials used in flooring both in the house and on the terrace. The wall surfacing; enclosing both room and terrace, also material used on the ceiling of the room and over the terrace can be used to join interior and exterior.

The second principle is the use of line in composition. With this principle we might assume the homeowner has used a vertical wood paneling on the wall adjacent to the "wall of glass". By erecting a wall on the outside of the same nature (i.e., vertical board) this acts as a tie, leading the eye from the interior to the exterior. The same is true when using stone, brick, or other types of building materials.



PRINCIPLE OF MASS JOINING TWO AREAS



PRINCIPLE OF LINE JOINING TWO AREAS

Not all people today have large areas of glass in their houses, but this needn't prohibit the use of these principles in getting a relationship with the out-of-doors. A window of adequate proportions, perhaps in conjunction with a door containing a glass panel, will serve well.

With these two principles a sense of union between indoor and outdoor areas can be worked out in all situations. It is a matter of evaluating the problem, and working out a solution by using the principles of "line and Mass".



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WALLS IN THE LANDSCAPE

By GERALD F. KESSLER

WEBSTER'S Collegiate Dictionary defines a wall as being, "A work or structure of stone, brick, or other materials, intended for defense, security, or for enclosure or for something that is like, or suggestive of, a wall."

Retaining wall as defined by Webster is; "A wall for sustaining a bank of earth liable to a landslide."

Mr. Webster's definition may be taken as somewhat antiquated and not entirely applicable to our present-day way of life. The definition may be rephrased and made applicable to landscape design by saying, "A wall is a vertical element in the landscape which may be designed to enclose space or to define changes in ground levels or both."

Walls that are constructed with native stone have within them the ever present qualities of nature, warmth, color, shape, and enduring strength.

Quarry stone that has been shaped by man into regular straight sides have their place within the geometric and rigid garden design. This stone is reminiscent of the castles of Europe and the early 20th century estates of the United States. Regularity of line and shape of stone walls often times were used entirely as a separate feature in the landscape. Today's designers have developed an inter-play with structure by bringing the landscape into a closed sensitivity with architecture by using the same material in walls, walks, steps, foundations, chimneys, and entire walls both in the interior and exterior of a residence.

Quarry stone that has retained the sharp, angular, and irregular lines of nature may also be designed for the contemporary garden but in a different way. The irregular pattern may define a difference in land levels and the separation of the finely manicured lawn from the coarser-textured materials of the native landscape. The prevalent texture and angularity of

the stone has a harmonious pattern of color and shadow that will always attract the eye and remain an important focal point for any garden.

Another form of garden design, which man has attempted to reproduce in miniature since early landscape history, is Mother Nature's landscape of earth, trees, tree stumps, stone, gravel and water.

This is accomplished by recreating irregular earthen mounds with layers of rock strata projecting into the open. A mountain pool and trickling stream can be built into this spot with only a few modifications and a recirculating water pump hidden away amongst the undergrowth and rock. The plants use, of course, should be indigenous to the area and replanted in a systematic manner as from Mother Nature's hands.

All types of native stone are available to the home owner who desires the warmth, color, texture, and playful versatility that stone possesses. Stone can be obtained in any size or shape and can be handled by one person very easily. Also, stone may be laid in a wall with either cement mortar or dry wall construction. The latter method lends itself to the economical do-it-yourself way and allows the individual the opportunity of changing the alignment and height of the wall or to leave an enlarged crevice for a planting pocket in order to have a living texture against the solid texture of stone.

May I say in closing, that man has manufactured other materials that have been utilized quite satisfactorily in the construction of walls such as brick, cement block, and concrete in all of its forms, but, indeed, man will have to improve tremendously before we can ever produce the quality and attractiveness which native stone possesses.



LET'S GET ACQUAINTED WITH OUR ROCKY MOUNTAIN FLOWERS!

By MORAS L. SHUBERT AND HELEN M. ZEINER

FOR many years all but the most persistant amateur botanists have been discouraged from learning to call our interesting plant species by name because of the lack of sufficient help to guide them past the first rough obstacles. Now, however, there are so many ways by which the amateur can get assistance that there is no good excuse for being unfamiliar with our native plants.

Whether self-study or group work fits the individual taste best, there are a few fundamentals that need to be followed. In beginning the hobby of botanizing (and experienced amateurs should do this periodically too), everyone should study plant structure in an elementary botany book until he knows the names of plant parts thoroughly. Even the technical books on identification are not too difficult for the sincerely interested amateur to master, if he will just "learn the language". More will be said about identification keys later.

One of the important items having to do with learning to recognize plants is plant collection. Unless this is done properly, the plant and the collector's time are wasted. Only plants which are to be preserved by pressing should be taken, and plants that are rare should not be collected even then. It is a good idea to always look around when an interesting species is found, and if there are not four or five specimens of it nearby, avoid pulling it or damaging it in any way. Instead, keep an accurate notebook record of it and its location. Plants that are collected should be given a sample number and pressed between sheets of newspaper. An accompanying notebook should show the identifying sample number and all pertinent information should be recorded with that entry. By the way, pressing of specimens may be done in a light weight press carried on trips, or the plants may be taken home for pressing during the evening. A stout plastic pliofilm bag makes a satisfactory carrying container, but do not make the mistake of sitting on your samples! A rigid metal container, such as a large coffee can, is recommended for those who cannot remember to avoid bruising their specimens.

Information, which must be recorded at once when the collection is made, will include the location, date, habitat, description of soil, slope, direction of exposure, moisture conditions, and altitude. Never make the mistake of saying to yourself "I can remember this and will write it down when I have more time," as notes of that sort do not get written, or else are very inaccurate.

Indispensable items for identification, besides the reference books, are a sharp razor blade (conveniently kept in a paper pocket inside the book covers) and a good magnifying lens. There are some very nice 10X lenses at very reasonable prices on the market now. Stationery stores and bookstores frequently carry these.

If the botanist prefers to work alone, he may be able to do his best work that way, but for most people there is much gain in fun and efficiency through group work. For example, there is an informal study group which meets on the second Monday evening of each month at



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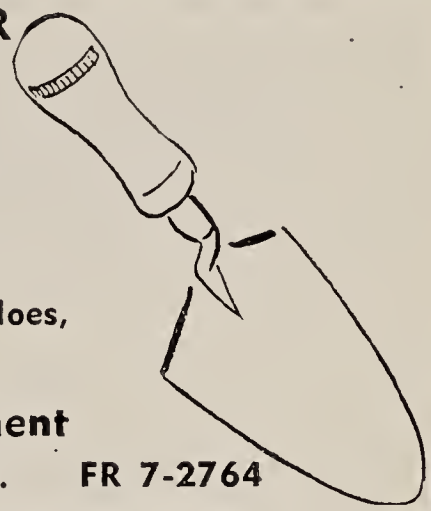
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Horticulture House. Anyone who is interested in learning more about plant identification is welcome to become a member of that group. There are probably (and should be) many other such groups around the state. In fact, the CFHA would be happy to hear about more such groups, so if you know of any, please write to Horticulture House.

Now a final word about reference books to help in plant identification. Here is where we are now most fortunate, because many aids have become available to us in the past few years; and since the newer editions are all following the now-standardized International Rules of Nomenclature, there are almost no disagreements in names. How often amateurs have given up when they have found that professional botanists in the past could not agree upon the correct name of a plant! To bring all of the known aids for this region together, an annotated reference list is appended. All of those will be found in the Helen Fowler Library, with the possible exception of the bulletins.

References for Identification of Rocky Mountain Plants*

The letters in parenthesis by each author name indicate the kind of book, whether (N) non-technical, (M) moderately technical, or (T) technical. Beginners should not be satisfied to remain at the level of the non-technical books, and those with more experience will find much to help them in all classes of books.

(N) Bulletins on weeds, poisonous plants, etc. from Colorado A & M College and Extension Service.

(M) Clements, F. E. and E. S. Clements, Rocky Mountain Flowers. The H. W. Wilson Company, 1945. Many amateurs have used this beautifully illustrated book successfully. The species names should be checked against those listed by Harrington's Manual.

(T) Harrington, H. D., Manual of the Plants of Colorado. Sage Books, Denver, Colorado, 1954. The most complete and up-to-date reference for Colorado now available. It is almost indispensable for the more serious students of Rocky Mountain plants.

(M) Harrington, H. D. and L. W. Durrell, Colorado Ferns. Colorado Research Foundation, Fort Collins, Colorado, 1950. A nicely illustrated paper-bound booklet describing ferns and their close relatives which have been collected in this state.

(N) More, Robert E., Colorado Evergreens. The Denver Museum of Natural History, Popular Series Number 9, 1949, Denver, Colorado. This excellently illustrated book contains a wealth of information about native members of the pine family and many of the horticultural varieties.

(N) Nelson, Ruth Ashton, Plants of Rocky Mountain National Park. U. S. Government Printing Office, Washington 25, D. C. Although the name indicates that this book describes plants for only a very limited area, it must be remembered that plants grow according to ecological areas, and are not restricted by park boundaries.

(N) Pesman, M. Walter, Meet the Natives. Published by the author at 372 South Humboldt St., Denver, Colorado, Fifth Edition, Revised, 1952. Using a novel way of grouping plants according to their customary altitudinal zones and by flower color, the writer has made it relatively easy for the novice to learn the names for many of the plants that have attractive flowers.

(M) Preston, Richard J., Rocky



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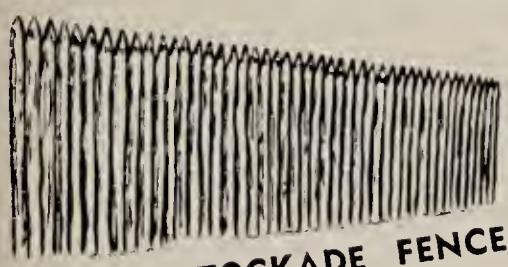
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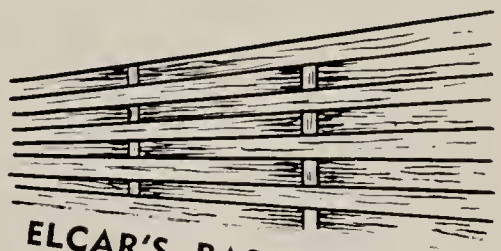
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Mountain Trees. The Iowa State Press, Ames, Iowa, 1947. An illustrated book with distribution maps of most of the woody species of the Rocky Mountain States.

(N) Roberts, Harold and Rhoda Roberts, Some Colorado Wild Flowers. The Denver Museum of Natural History, Museum Pictorial Number 8, Denver, Colorado, 1953. This little booklet shows interesting representatives of many of our wild flower families in reproductions from the Robert's superb color photographs.

(T) Weber, William A., Handbook of Plants of the Colorado Front Range. University of Colorado Press, Boulder, Colorado, 1953.

This is a most useful abbreviated key to plants of the eastern slope of the mountains, and adjacent plains.

* For practical purposes, this is an abridged list of books presently available and so it does not include many excellent library references.

PEEK AT THE MAIL

The following is part of a letter to Robert More from Dr. A. C. Hildreth of Denver, who is now in Kabul, Afganistan:

"This is magnificent country with mountains over 25,000 feet high, immense valleys watered by rushing rivers, deep canyons and extensive desert wastes. Aridity, sheep, goats, and camels make for sparse vegetation in much of the country. Although the plants may be scarce, they are in great variety and of much botanical and agricultural interest. This is the native home of wheat, rhubarb, asparagus, the almond, pistachio, olive, jujube and several other economic plants. The forests have many species of interest to an evergreen fan—Pinus geraldiana, Pinus longifolia, Juniperus and the magnificent Deodar cedar which is the principal timber tree. Kabul has about the same elevation as Cheyenne and the climate is similar to that of Santa Fe.

"The family and I just returned from an interesting vacation in India and Pakistan. We visited the usual tourist places and also agricultural stations and Botanical gardens. Of special interest was the Botanical garden at Lucknow and the many formal gardens of the Mogul period, particularly those in Kashmir.

"From this you can see that I am having a great experience and am enjoying it all. The Afghans are admirable in many ways. One can forget their indifference to sanitary matters when he recalls their many kindnesses, their genuine friendliness, and their gracious hospitality."

Dear Sir: There is a notable error in an excellent article in the current (February) number of The Green Thumb . . . The Search by G. E. Rumley. The author refers to a 17th century thinker as "Roger" Bacon. Of course he means *Francis* Bacon (1561-1626), an outstanding, original thinker.

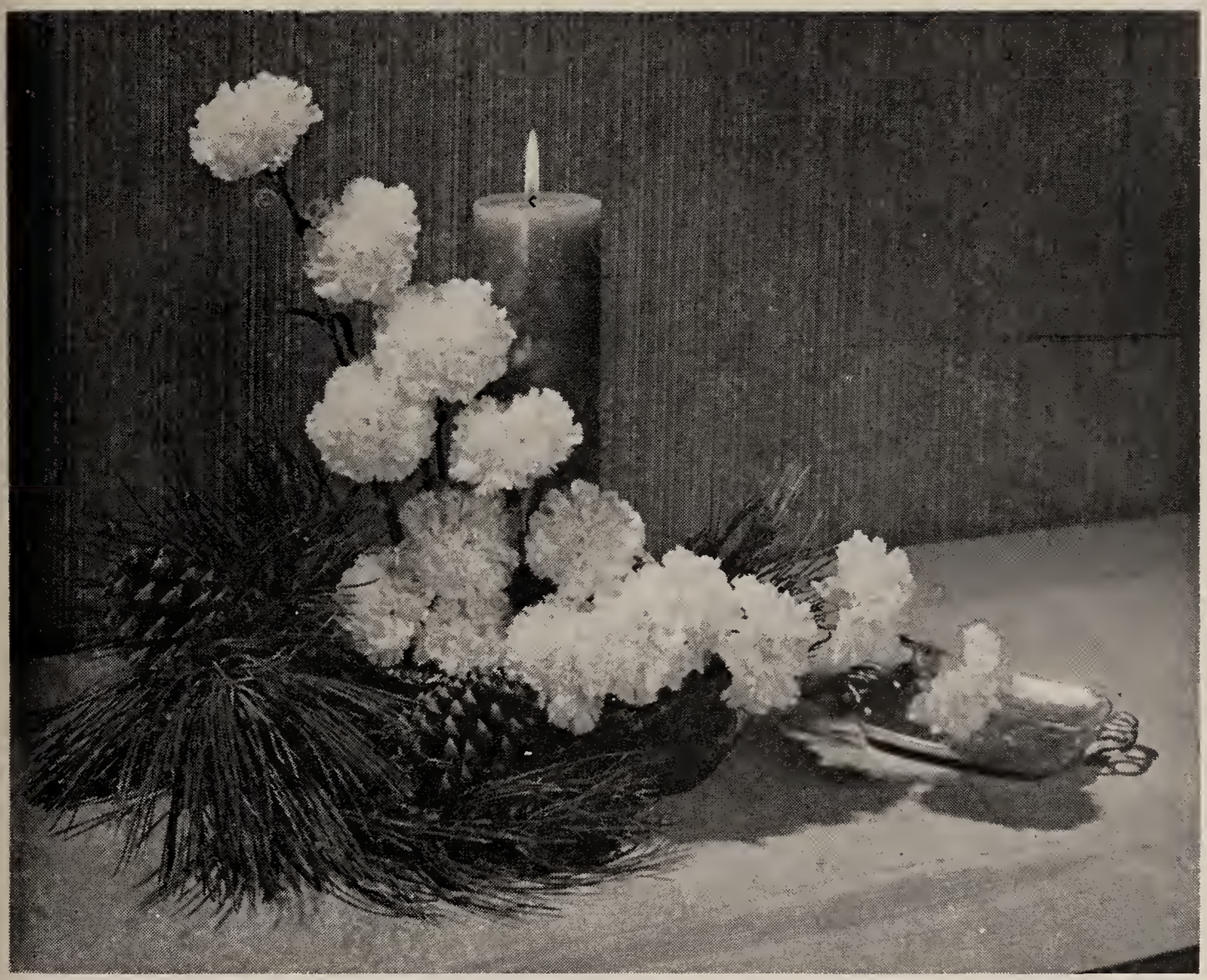
Roger Bacon (1214-1294?) was perhaps even more original but so far ahead of this time as to be ineffectual.

MARTHA LEONARD,
Mount Kisco, N. Y.

TO the GARDEN CLUB OF AMERICA:

A most sincere and hearty welcome to Colorado. May you enjoy the garden treasures of our Rocky Mountains.

Kathleen N. Marriage



COLORADO CARNATIONS

ROCKY Mountain gardeners can take heart from the fact that their part of the world enjoys such a fine climate that it makes possible the growing of the world's best quality carnations — Colorado carnations —in and around Denver and Colorado Springs.

The existence of the Rocky Mountain's salubrious climate for flower growing was discovered back in the 1890's when a number of growers put up greenhouses in the area and began to provide cut flowers to Denver society during the gay decade which closed the 19th century. Greenhouse glass subsequently was increased until today the area boasts over 4,000,000 sq. ft., and a wide miscellany of cut flowers ranging from snapdragons and iris to roses and carnations is grown. The main emphasis, however, is on Colorado carnations, with a total of 4,000,000 plants producing over 40,000,000 flowers each year.

Colorado carnations are shipped to every corner of the United States on a regular basis. Most of the business on these premium cut flowers is done out of state, with approximately 36,000,000 of the 40,000,000 sold in areas such as Texas, Oklahoma, Mississippi, Florida and other southern states where extreme hot weather and high humidity make the production of quality carnations virtually impossible.

Carnations are a cut flower whose growing habit requires warm, sunny days and cool, crisp nights. The high altitude air of the Rocky Mountain States provides the perfect growing

situation. This is not a matter of local opinion, but is substantiated every year at the annual meeting of the American Carnation Society.

At these meetings, carnation growers hold competitions themselves for carnations grown in the various areas around the United States. Judges are selected from amongst the member growers. Each year, Colorado Flower Growers receive the major percentage of all prizes, with the medals for the finest vases at the show generally going to the Colorado blooms.

Although there are over 125 individual varieties grown, there are actually somewhere in the neighborhood of 50 varieties which are grown commercially in quantity. They range in infinite variations from pure white through yellow, pale pink, medium pink, red, purple, down to the deepest maroon. There also are carnations which carry a high degree of variegation in the petal, which combine combinations of white and pink, white and red, white and purple, yellow and red, yellow and orange, and other interesting patterns. The only color which does not occur naturally in carnations is blue, and it is sometimes necessary to dye white flowers in order to provide this color. The carnations are also dyed green for St. Patrick's Day.

Colorado carnations are famous for their great size, wide variety of color and variegation, and their keeping quality. They have been known to keep up to two weeks in household bouquets, thus providing flower buyers with a very substantial value.

Although Colorado carnations can be grown out of doors, it is a very difficult process because of the problems of insect control and control of plant diseases, fungus growth, and virus infections which tend to attack carnation plants. In greenhouse culture, the soil is sterilized regularly. Diseased plants are thrown away. Regular treatment with special sprays and fumigants suppress insects and fungi before they can attack the plant. Because carnations are very highly hybridized and do not produce true to type from seeds, they are vegetatively reproduced from slips or cuttings. Therefore, cuttings are taken from sturdy, well-formed plants which yield only top quality flowers. These cuttings are rooted in sand or perlite and taken through a series of growing stages until they finally end up as fully matured plants ready to produce Colorado's most famous blooms.

An innovation is being undertaken this year with air-conditioning of all major greenhouses by evaporative cooling devices. This will enable Colorado growers to produce the finest quality carnations on a year-round basis in spite of hot summer weather, and will extend the season and the market for cut flowers far beyond its present potential.

With Colorado carnations justly famous for their beauty, important to the Rocky Mountain Region as a source of new income, and promoters of the area in the hundreds of thousands of homes they go to, small wonder that Colorado growers are justly proud of the place they occupy in the state's expanding economy. Proof of the pride which growers feel in their flowers is indicated by the fact that they place on every 6th bloom a little trade-mark seal bearing the name, "Colorado Carnations". Thus, Colorado carnations are the only flower in the world today sold under a brand name or trade-mark. In addition, they are nationally advertised in full color in consumer magazines.

PLANTING ROSES IN THE MILE HIGH COUNTRY

By EVERETT O. NORD

District Director and Accredited Rose Show Judge, American Rose Society

MARCH is the usual and best time to plant roses in the Mile High Country. Plant your new bushes as soon as possible after you receive them. If the weather happens to be severe, they should be heeled in, that is, buried completely until weather conditions are right for you.

If you can plant them as soon as received, take the bushes out of the package and place them in a tub of water until ready for planting. If you don't plant them immediately, take them out of the package and bury them. This keeps them green and moist until planting time.

When planting the bushes in established beds, be careful not to put the new bush in the exact spot an old bush occupied. Make an entirely new hole for the new bush. Dig a big, generous hole—deeper if the soil is heavy, and put some gravel in the bottom for drainage, for roses don't like wet feet. Then put some green manure in the bottom of the hole, which should be covered with a foot or more of good top soil, mixed with peat moss or compost. Form this soil in the shape of a cone so the roots won't get all jammed up when planting. Then trim off all the broken roots, and the ones that are too long to fit just right. Bone meal can be added also if you wish. Then cover completely with prepared earth and peat moss, or compost, and tamp down firmly, leaving the crown just under ground level. Soak thoroughly with water, making sure all air pockets have been eliminated.

Trim the bushes down to about ten to twelve inches, leaving only four of the best canes, then cover to within a couple of inches of the top of the bush with soil. This can be done a lot easier by making a cylinder of heavy paper and filling that with soil, after it has been placed around the bush. This keeps the bush green and moist, preventing it from drying out until the roots have made contact with the soil, and can start to grow. When this happens, you will note that leaves begin to form on the exposed ends of the bush. After this happens, commence taking the soil away gradually, until all is removed, which will take several days. Planting roses in this way will save you loss and I'll guarantee that 99% or more of rose bushes planted in this way will not only live, but will grow into sturdy plants and do excellently.

For further advice I invite you to join the American Rose Society, and the Denver Rose Society. You will become associated with other people who grow and love roses, and you will gain much information as to the "whys" and "wherefores" of rose growing. You may also call on the Counsulting Rosarians of the Denver area for help. A list of them may be secured from any member of the Denver Rose Society.

All those interested in having their 1955 Green Thumb magazines bound (cost $5.00) call Horticulture House on or before April 15.

CHRISTMAS BIRD COUNTS

By JOHN L. CHAPIN

THE major ornithological event in winter in this country and Canada is the Christmas Bird Count. Started in 1900 by Dr. Frank Chapman this undertaking, now under the joint auspices of the National Audubon Society and the U. S. Fish and Wildlife Service, has expanded with several thousand birders spending from dawn (or before) until dusk counting birds. Each local count is made in a circular area 15 miles in diameter. Usually the same area is used each year and, in addition to the sport afforded, the count provides information on population cycles and long range trends in bird populations. This year 112 species were reported on the official counts in Colorado. The counts are published in the Audubon Field Notes, a publication of the National Audubon Society. In addition the counts from Colorado are published in the Colorado Bird Notes, a publication of the Colorado Bird Club. Annual Colorado Counts are made in Ft. Collins, Rocky Mountain National Park, Longmont, Lyons, Boulder, Idaho Springs, Jefferson County, (the last two by birders from the Denver area), Colorado Springs, Gunnison, Durango, and in other areas somewhat less regularly.

In selecting a count area the prime consideration is diversity of habitat. Open prairie of the Upper Sonoran Zone supports few birds in the winter. Most of these are Horned Larks with an occasional flock of Lapland Longspurs, a few hawks and Short-eared Owls. Edges and stream bottomland are much more productive. These areas may include: Herons, Killdeer, Snipe, Horned, Long-eared, and Screech Owls, Mourning Doves, Kingfishers, Flickers, Lewis', Hairy, and Downy Woodpeckers, Blue Jays, Magpies, Crows, Black-capped Chickadees, White-breasted Nuthatches, Brown Creepers, Robins, Shrikes, Meadowlarks, Redwings, Rusty and Brewer's Blackbirds, Evening Grosbeaks, House Finches, Goldfinches, Siskins, Spotted Towhees, Juncos, Tree, White-crowned, and Song Sparrows. Warm marshy areas might contribute Virginia Rails, Long-billed Marsh Wrens, and Swamp Sparrows in addition to more Song Sparrows.

Open water of lakes and larger streams adds a variety of water birds such as Geese, Ducks, Coot, Gulls and possibly Loons and Grebes. The oak and rocks of the lower transitional zone contributes Scrub Jays, Canyon Wrens, and more Towhees. An open stream flowing down from the mountains through this zone is usually good for a Dipper. The upper transitional and Canadian zones (montaine to the botanists) have Steller's Jays, Red-brested Nuthatches, Pygmy Nuthatches (specific to the Ponderosa pine of the transitional zone). Red Crossbills (if the cone crop is good), Mountain Chickadees, Siskins, Solitaires, Cassin's Finches, and Juncos. Still higher the Hudsonian zone (subalpine to botanists) has Gray Jays, Nutcrackers, Ravens, Three-toed Woodpeckers, and at the upper limits (timberline), Ptarmigan. Many of the eastern slope groups take advantage of their peculiar position to increase their chances of finding more species by including many habitats in their count areas. However, another feature, the finding of rarities, gives added zest to the birders of these areas.

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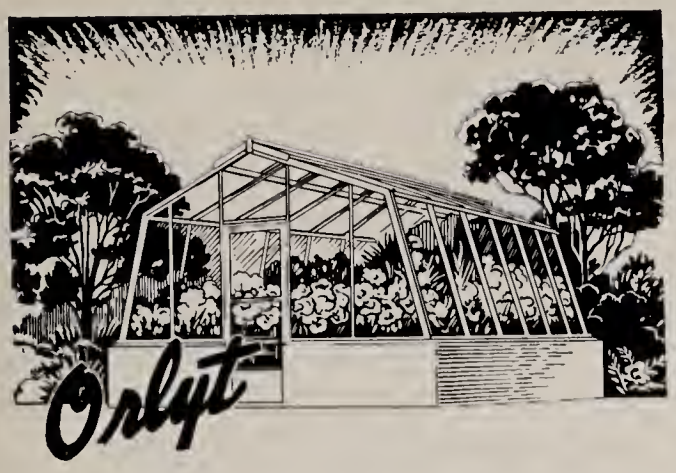
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(which are not well understood) of a few western birds do not function properly and, instead of going south in the fall, they wander east. If they fail to find suitable feeders where they can live out the winter, they continue wandering until they are stopped by some physical barrier such as the Atlantic Ocean. The incidence of western species along the dunes of Cape Cod and outer Long Island in mid-winter is high. The prevailing westerly winds are probably a factor in this easterly movement. However, there also appears to be a concurrent westerly movement of eastern birds. If the Great Plains can be negotiated safely, an eastern wanderer comes to the Colorado Rockies. The smarter wanderer does not attempt to cross the mountains but settles down along the eastern edge and attempts to find sufficient food to live.

If the wanderer finds a feeder which is adequately and frequently supplied, he will probably live out the winter in the immediate vicinity of the feeder. If not, he will probably try his luck in the brush where a stream cuts through the hogback.

Among the unusual species (eastern and otherwise) which have been found along the eastern slope in mid-winter are: Winter and Carolina Wrens, Brown Thrasher, Mockingbird, Black and White, Myrtle, and Palm Warblers, Fox, White-throated, and Harris' Sparrows. Others probably get here but are unreported because they die soon from starvation or because those with feeders don't report them.

A scattering of Mockingbirds occurs along the eastern slope in summer. They were virtually unknown to occur here in wintertime until this winter when single birds turned up in Cheyenne, Fort Collins, Loveland,



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Morrison, Waterton, and Colorado Springs. There was no discernable increase in abundance of local Mockingbirds last summer. The eastern slope area was well covered in previous years but no Mockingbirds were reported. The presumption is that this is an influx from the east where, although Mockingbirds are not noted for being migratory, population pressure may have forced them to spread out.

Each years' Christmas Count usually turns up something interesting such as these Mockingbirds. This year Nutcrackers invaded low altitude. Two years ago Pine Grosbeaks did the same thing. Last year a Glaucous Gull, an arctic sea bird, was found in Jefferson County and a Carolina Wren at Colorado Springs. In 1952 we had Sapsuckers at Ft. Collins and Morrison. In 1951 we had a Brown Thrasher south of Morrison. Such finds add to the pleasure of taking a day from a busy season to do something completely different and allows one to test his skill and stamina in the sport and science of winter birding.

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The Green Thumb

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The Green Thumb

Vol. 13 MAY, 1956 No.4

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

OFFICERS

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Treasurer.....Lemoine Bechtold
Executive Committee.....The Above Named Officers
Plus Mrs. Vella Conrad and Fred R. Johnson
Assistant Secretary-Treasurer.....Mrs. Ruth E. Sauer
Editor.....Patrick J. Gallavan

CALENDAR OF EVENTS

May 7—"Fun with Flowers" first Monday of each month, Garden Center, W. Alameda Ave. and Kalamath St. 10:00 a.m. Mrs. Wm. R. Rutchman, Chairman.

May 9—Organic Garden Club meets the second Wednesday of each month, 8:00 p.m. Horticulture House.

May 12—Northern district Junior Workshop meets the second Saturday of each month. 10:00 a.m., Boulder, Colorado. Mrs. W. C. Sullivan, Chairman.

May 14—Botany Club meets the second Monday of each month, 8:00 p.m., Horticulture House.

Green Thumb Program, 9:00 a.m. every Saturday KLZ on your radio dial. Pat Gallavan, Horticulturist, with Bill Jones.

Seasonal Suggestions

May is a busy month in our gardens. Much of our time will be spent in preparing our outdoor living rooms for the pleasant moments we will spend there in the months ahead.

May 1st to the 15th: Most planting and transplanting of bare root shrubs, trees, etc. should be completed. Roses can be trimmed and the protective mound around them removed during this period. Either organic or commercial fertilizers can be applied to lawns, trees, and shrubs.

After the 15th: Set out bedding plants, plant tender garden vegetables and annual seed. Add a summer mulch to perennial beds and other exposed areas to conserve soil moisture. Check various plants as weather gets warmer for early appearance of mites and aphids.

PATRICK J. GALLAVAN.....*Editor* MRS. HELEN FOWLER.....*Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. GILBERT SAUER, *Custodians*

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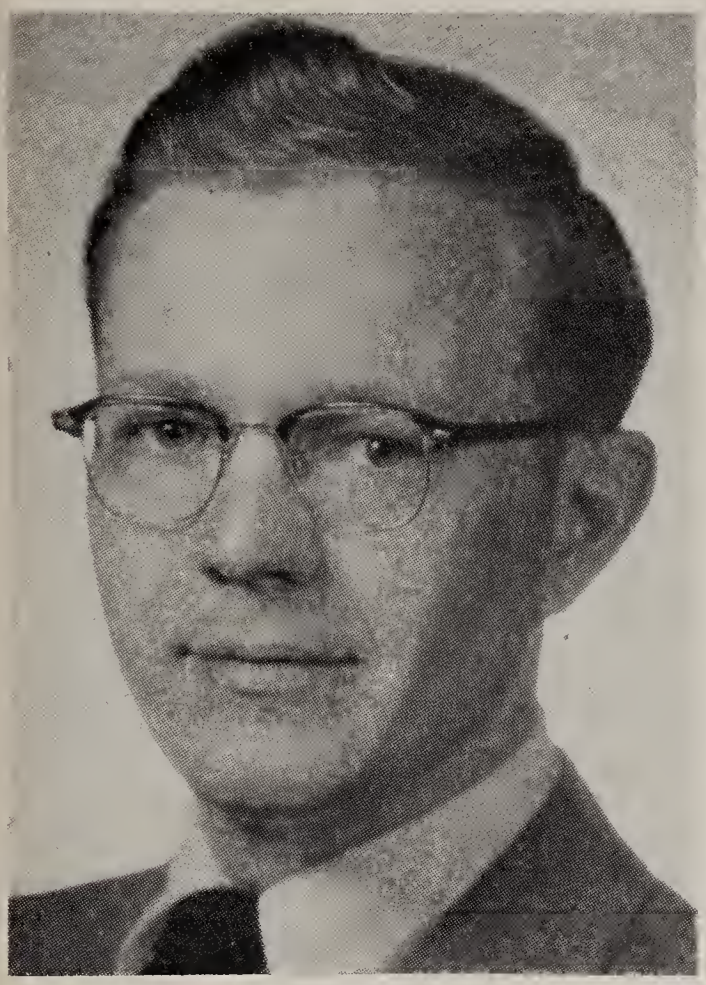


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ROBERT L. WOERNER, newly appointed Botanical Garden Director for Denver, is a 1949 graduate of the University of Syracuse with a B. S. degree in horticulture and landscape engineering. He was employed in 1949 by the City of Yakima, Washington, where he was in the Parks Department for two months and consultant in city planning for five months. During this time he laid out subdivisions in Yakima and did landscaping for private homes. In 1950 he went to Spokane, Washington, as horticulturist, becoming Assistant Superintendent of Parks and a few months later Director of the Finch Arboretum which is supported by the City of Spokane. Mr. Woerner was chairman of the education committee of the Western Chapter of the National Shade Tree Conference as well as the Parks, School, and Street Tree committee.

While at Finch Arboretum in addition to supervising all activities, he wrote and caused to be widely distributed the "Finch Arboretum Newsletter." As if that weren't enough, he has also actively participated in landscape design and engineering, pest and disease control, planting and maintenance, propagation, was responsible for acquiring, mapping, and labeling plants in the arboretum, did research, directed fund raising campaigns, and did a fine job in public relations through talks, lectures, and various other activities.

With such a background, along with a warm, friendly personality and lots of vitality, the Association is proud to welcome Robert L. Woerner, his wife, and two children to their new home. We all wish them much success, happiness, and lots of good luck.

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ARRANGEMENT OF THE MONTH

By Mr. and Mrs. Ray Turnure

A PINK carnation nestled in with the foliage and flower spray of a paper white narcissus creates a fresh spring picture in a few minutes. The container is a copper pitcher with a handle that counter-balances the graceful droop of the leaves on the opposite side. The rings around the pitcher add horizontal accent for the slender height of the foliage making a lovely harmonious design.

PRESIDENT'S REPORT

AS YOUR President, I am both honored and privileged to present to you an annual resume of the Association's activities during the year 1955. After you have read this report, I think you will agree with me that our Colorado Forestry and Horticulture Association has made considerable progress during the past year after due consideration of the problems and difficulties that came about through a variety of circumstances and events.

First of all, I would like to tell you that the job of the Presidency of the Colorado Forestry and Horticulture Association under our old staffing could be considered nearly a full-time job. I still marvel how our good friend and past President, Fred Johnson, ever accomplished all the things he did in so little time. The fact that I have a full-time occupation and could only serve from time to time as President, necessitated staffing rearrangements at Horticulture House—one of the achieved objectives of the year 1955. As most of you know, it was necessary to restaff every one of the three paid positions at Horticulture House during the last year. First it was necessary to find an able and capable successor to George Kelly who had served this organization faithfully and diligently for so many years. This successor was found in the person of Patrick J. Gallavan, who became our Executive Director and editor of The Green Thumb Magazine on June 1st, 1955. Shortly after Mr. Gallavan's assumption of his new position, Mrs. Patricia Ann Cook, who had helped us over many rough moments, tendered her resignation and Miss Melanie Brown was hired in her place. Finally, just before the close of the fiscal year, our Secretary-Treasurer, Mr. Spiro L. Nickolas tendered his resignation and the replacement committee was again called in to find a new custodian and Secretary-Treasurer to our organization. With great pleasure, indeed, we found Mr. and Mrs. Gil Sauer who now serve as the new residents and assistant Secretary-Treasurers of Horticulture House.

So much for matters of personnel.

You can easily see that we had our hands full and our minds steadily occupied during 1955 with all these changes. I must honestly confess that without the loyal and selfless assistance rendered by officers and members of the board much of this would have been more difficult than it was. Another problem which had been circumscribed for several years and finally had to be faced and worked out was the matter of the taxation of our premises at 1355 Bannock Street. The Denver Assessor's office required payment of our taxes before April 30th and there was not much else we could do other than pay these taxes under protest. Our thanks and appreciation are extended publicly to our good friend and past director, Mr. Robert More. Through his friendly and devoted cooperation, a member of his law firm, Mr. Kenneth Whiting, was made the legal consultant and advisor to your Board. Mr. Whiting gallantly assisted us in this taxation effort and our good past president, Fred Johnson, who presented our case before the Board of Equalization is also to be congratulated and thanked for his high spirited effort. Finally, toward the end of the year, after the State Board of Equalization had also been called in on this matter of taxation, the case was finally won by our association

and the tax-free occupation of 1355 Bannock Street, more generally known as Horticulture House, was assured for another period of years.

Before mentioning some of the extremely fine efforts that were made in behalf of our organization by many individuals during the past year, I should give you a short report of our financial standing during the past year. Regretfully, I must report to you that our income was down considerably last year over previous years. This was due to a number of reasons, none of which need to be enlarged upon at this time. However, on the good side, I can report that with the reduction of our income also came a notable reduction in expenses so that we closed our books for the year with only a very negligible deficit. I might add that this deficit was smaller than the purchase price of a new addressograph machine which was a necessity and was purchased during the year 1955. The greatest amount of savings of expenditures during the past year can be attributed very definitely to the cost of printing and maintaining our monthly magazine, The Green Thumb. This brings me directly to one of our most devoted and hardest working committees, the editorial committee. This group of individuals under the leadership of M. Walter Pesman and Mrs. Henry Conrad has done much to improve the quality and readability of our magazine.

The finance committee has also been extremely helpful during the past year. Whenever income is down and expenditures must be carefully noted, the watchdog services of the finance committee are indispensable. Chairman John Swingle, at the outset of the year gave us the support and assistance that we so sorely needed. When his declining health made it necessary for him to step down from this responsible position, Fred Johnson was "Johnny-on-the-spot" and guided us through the remainder of the year in great style and with admirable finesse. Our special thanks also go to Mr. Everett Cline, who rendered our annual audit recently.

Another committee which jumped into a quickly developing breach and rendered a wonderful service was the garden tours committee. Under the co-chairmanship of Mrs. R. M. Perry, Mrs. Frank McLister and Mrs. Alexander Barbour, a very admirable series of garden tours were held during 1955. The tours netted the association a handsome sum of money which helped greatly in sustaining our operations during the past year. Our thanks also go to the many individuals who assisted with the garden tours as ticket takers, experts, and in other capacities.

Another committee that has continued to grow and prosper is the library committee under the excellent leadership of Mrs. Helen Fowler. The Helen Fowler Library has grown during the past year and shows so many new volumes that it will be necessary shortly to find additional shelf space for the wonderful books that this committee has added to the finest horticultural and conservation library in this Rocky Mountain area.

Members of our organization's State Parks and Conservation committee rendered a most notable effort in connection with the session of our State Legislation in 1955 in obtaining the creation of a commission and setting up of funds for the development of roadside parks in Colorado. The efforts of these individuals are herewith thanked for publicly.

One of our newest directors and

chairman of the publicity committee, Mrs. Henry McLister, did an admirable job in obtaining the necessary publicity for our organization's programs and events during the past year.

Finally, one of the most marvelous efforts of any committee during the past year was the Botanical Garden committee's presentation of a lecture by Dr. Ruben Gustafson of the Ford Foundation last April. Through the personal efforts of Chairman Mrs. George Garrey and many other members of her committee, this lecture was sponsored by the Garden Club of Denver for the benefit of the Colorado Forestry and Horticulture Association and the Denver Botanical Garden. "Mrs. Garrey, the check that you and your committee turned over to our treasurer was most sincerely appreciated and it helped to maintain a favorable balance of funds during the past year." Many other committees, which are so necessary to our organization's proper maintenance of functions, served devotedly during the year. Here I should mention the efforts made by the beautification and education committee, the herbarium committee, the house committee, and the membership committee. One other special committee which helped very much to replenish our coffers was the plant auction committee. Under the leadership and efforts of Ken Wilmore in cooperation with the nurserymen and arborists in the city, we were able to have a fine auction sale in the parking lot of our association's premises last May. Colonel John Swingle again made one of his delightful appearances, seeing to it that people got good stock at low cost.

Next, I wish to pay tribute to a person who, despite her own changing conditions of health, has given more than generously of her time so that your organization could continue to function properly. That person is none other than Mrs. Vella Conrad, our devoted director and advisor.

The association's Green Thumb radio program was continued under the sponsorship of the Colorado Nurserymen's Association over radio station KLZ. Our many thanks to the Colorado Nurserymen's Association and radio station KLZ for their continued support, so that worthwhile gardening information can be made available to all interested persons in the state.

During the waning days of our organization's calendar year, we also made some changes in our by-laws and constitution. This committee, under the leadership of Earl Sinnamon, revised our by-laws and what necessary changes seemed profitable for the future growth of our organization. One change of note is the increase of directors from 27 to 33. This was done with the idea in mind that the six new directors should be from outstate areas rather than the metropolitan area of Denver. If our organization is to be a state organization it should also be represented by persons from all over the state. A director in other urban centers outside of Denver and the potential interest created through such a directorship should afford the impetus for new interest in the activities of our organization from one end of the state to the other and across the mountains to the western slope. Several other changes were made which seemed practical to your Board of Directors under the circumstances.

Incidentally, this Board is made up of some of the most notable individuals in our community. We have among them such professionals as

landscape architects, nurserymen, seedsmen, horticulturists, arboriculturists, foresters, educators, and businessmen as well as home gardeners. All these people have given much more than just their regular time during the past year so that the association could continue to grow and weather all the storms that came about. I can safely say that the officers and directors held as many special or emergency meetings during the past year as they held regular meetings because of the changing nature of events that occurred during this bit of association history.

Finally, many thanks to all of you for all you've done for your organization this past year. There is one more thing that I would like to say to you at this time. Our membership effort during 1955 has not been what it should have been and what it might have been had we not undergone so many changes of sweeping importance. I feel that our organization is now grounded sufficiently well to go into the year 1956 with the type of outlook that can be termed as secure and optimistic but there is one task that I should like to charge all of you with—individually and as a group, and that is to remove your coats, roll up your sleeves, and bring us some new members in 1956. If every member of our organization were to give us just one new member during the year 1956, think of what we could do with a membership of 4,000! Rather than to allow myself to dwell on the tremendous progress that such an increase in membership could mean for your association, I challenge you to bring us at least one new member in 1956. For those of you who will bring us three or more members I will ask our Executive Committee to work out some special recognition so that you will know how much we appreciate any effort on your part for your organization.

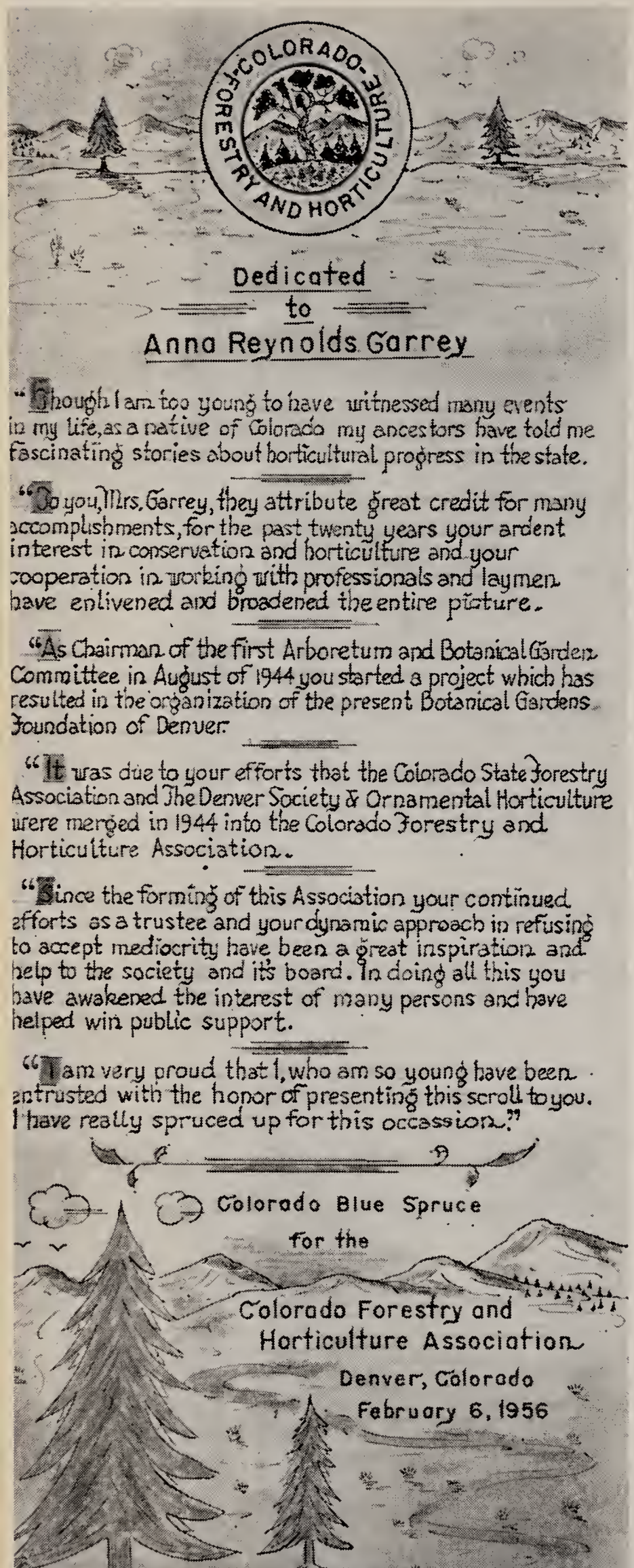
ERRATA for March-April Green Thumb.

Insertion for Table of Contents—A French Hotel in the Rockies by Charlotte A. Barbour P. 47.

P. 51 Virginia Senna should be Virginia *Sena*.

P. 39 Fine, Larch Spreader should be Fine, *Large* Spreader.

The Association would like to take this opportunity to pay tribute to the late Eric Douglas, internationally-known director of Chappel House whose lovely garden was on the "Look and Learn" visits last summer and was pictured in the December Green Thumb. Internationally known for his vast knowledge of primitive art, his collection for Chappel House of art from all over the world, and his particular knowledge of Navajo rugs, his loss will be severely felt by the Art Museum, its staff, and the public in general. His friends will remember his warmth, sincerity, and truly Christian way of life.

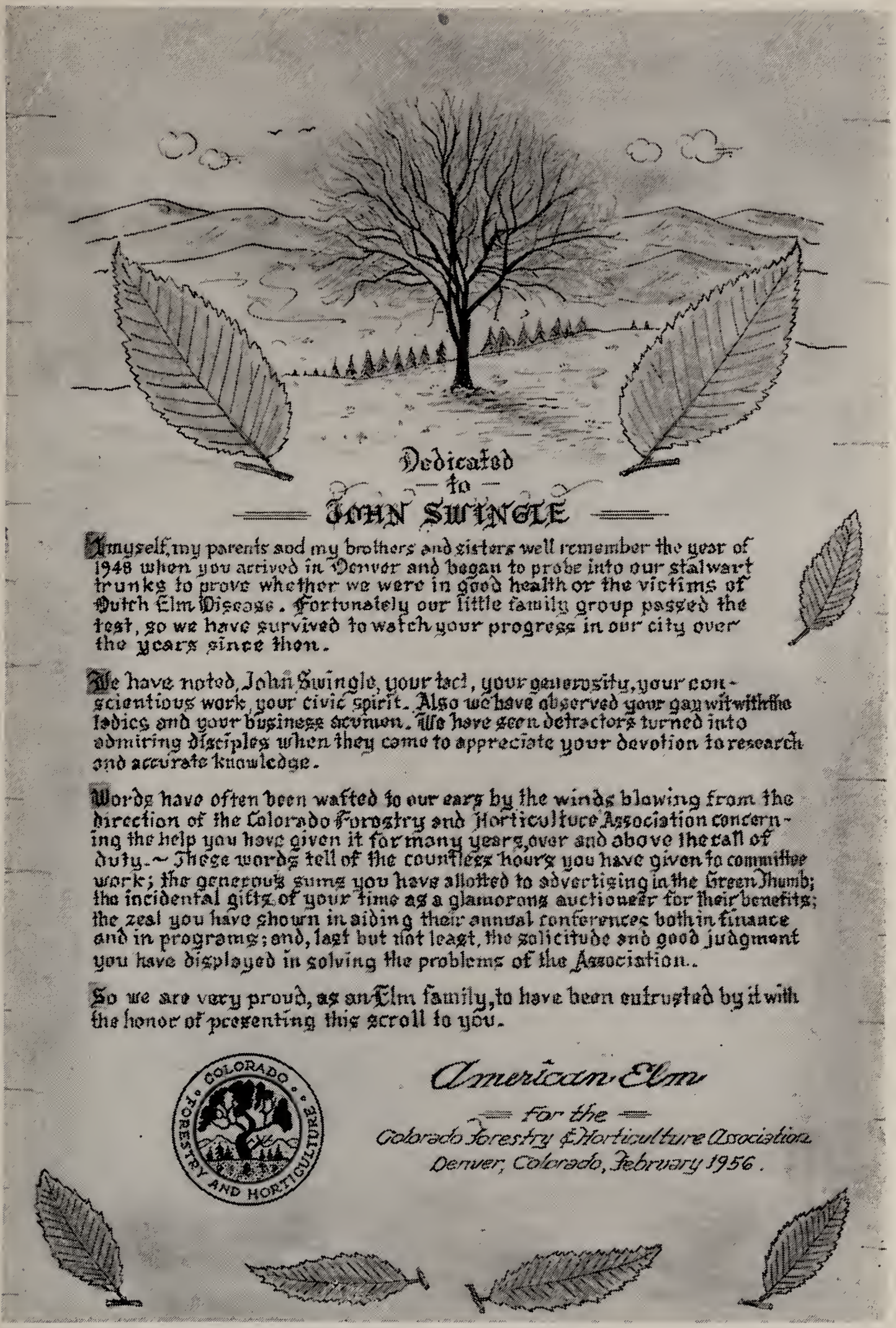


Special Awards Given Two Members of Association

A FEATURE of the annual meeting of the Association on February 6 was the presentation of the Blue Spruce award to Mrs. George H. Garrey for her long and faithful service to the cause of conservation and to horticultural science and practice. The citation, artistically designed and beautifully executed in semi-old English on parchment paper by Frank E. Washburn, speaks for itself. It gives the record of Mrs. Garrey's activities and indicates in a small way the appreciation and love her co-workers have for her and for her generous contribution of time, talent, and material assistance. The committee appointed by President Gundell to prepare the citation, consisted of Mrs. James J. Waring, Mrs. Alexander L. Barbour, and Fred R. Johnson.

The American Elm award of the Association was presented to our fellow trustee, John W. Swingle on February 28. He has done so much for good arborculture, shade tree pathology, and insect control that the trustees wanted to make these facts a matter of record. The title of the award stems largely from his efforts towards eradication of elm scale and the elm beetle which is the principal carrier of the Dutch elm disease that threatened the American elm in Denver several years ago.

A delegation consisting of President Gundell, Mr. and Mrs. George H. Garrey, Mrs. Alexander L. Barbour, and Fred R. Johnson made a



surprise call on John at his home and for once in his life words failed him until "Vi" (Mrs. Swingle) came to his rescue.

Congratulations to Mrs. Garrey and John Swingle!

AROUND THE CALENDAR WITH IRIS

By MRS. H. G. HOUSLEY

HOW often have you heard, "Oh, iris are all right, but they have such a short blooming season!" Like so many ideas that get circulated about cabbages and kings, flowers and other things, "It ain't necessarily so." It is not even true about the most common kind of iris, the Tall Bearded, which we see in nearly every garden, and which will bloom from May 15 to June 23 if varieties are carefully chosen. And if you like iris well enough, it is theoretically possible to have them in bloom all twelve months of the year. Actually, in our climate, nine or ten months is about as much as you can hope for, so content yourself with buying some lovely blooms from the florist in December and January. The best record we have been able to achieve in our garden is to have some kind of iris in bloom in each of nine months of the year. We think that if we really tried, we might be able to stretch it to ten.

If you decide you would like to try having iris around the calendar, approach the genus Iris with an open mind. Don't expect all species to look like the Tall Bearded. Some are nearly as small as jewels and equally as beautiful. There are bearded iris, iris with crests, and iris with signal patches. Some grow from bulbs and some from fleshy rootstocks known as "rhizomes". (The Tall Bearded are the best-known example of the latter, the "Dutch" of the former.) Some are appreciated only by avid collectors and botanists, and will probably never be known to anyone else. There are other iris which are known to few besides collectors but really should be known to everyone because of their beauty and good habits. It is not necessary to know about all of them in order to carry out your project of iris around the calendar.

Midwinter To Early Spring

Iris reticulata—varieties Hercules, J. S. Dijt, Cantab. These are very small bulbs. Plant them 2 to 3 inches deep. They grow in ordinary garden conditions but for best results plant them on sunny side of wall. Give good drainage. Water is not necessary in summer and they bloom through snow in February and March.

Late Winter To Midspring

Dwarf Bearded iris—same as Tall Bearded (see below). Many varieties are excellent for rock gardens.

Midspring To Early Summer

Intermediates (cross between Dwarf and Tall Bearded). These are the



Iris pumila (Dwarf Iris)

same as Tall Bearded. Consult your catalogs for good kinds. If your neighbor wants to give you some be sure they are pretty for there are some awful "dogs" in this class.

ONCOCYCLUS AND REGELIA HYBRIDS

This includes the "Mohr" group developed by Wm. Mohr, Dr. P. A. Loomis, and others. These need dry, well-drained, lime soil in sunny, exposed location. The ancestors of these iris are from the Holy Land and must not be watered in the summer, so are ideally suited to our dry climate. Some of the rarer species are for connoisseurs only, but many of the hybrids which have been crossed with the Tall Bearded, such as Wm. Mohr, Lady Mohr, and Elmohr are suitable for the home garden.

"Dutch" iris — varieties Wedgewood, Bronze Beauty, King Mauve, Princess Beatrix, White Excelsior.

These are good for perennial borders with good drainage. May be lifted after blooming and replanted in the fall. Some say they require winter protection because of winter growth, but they seem to survive our peculiar winters.



"Oberon" Oncocyclus—Regelia Dwarf



Iris siberica ("Siberian" Iris)

"Siberian" iris—varieties Caesar's Brother, Gatineau, Ottawa, Tycoon. Eric the Red, etc.

Use in perennial border in fairly moist spot. May be planted with Louisianas and Japanese though they are somewhat less exacting. (Note: The two preceding kinds will bloom before, after, and during the Tall Bearded season.)

TALL BEARDED IRIS

These are hybrids of a number of bearded species, and though they used to be referred to as "German" iris. this is an inaccurate term. These are the most popular and most frequently grown of all iris in our area as they are particularly adapted to our cli-

mate and soil. Their number one requirement is good drainage, so if your soil is heavy clay, dig in plenty of sand or make other arrangements for draining it. Like most iris, they like sun, but in our extra bright, sunny climate they can stand partial shade. Some varieties even have brighter colors if given partial shade. The Tall Bearded are tough and can stand a great deal of neglect and abuse; therefore, a great many theories have sprung up in regard to their culture. However, they will reward you with better bloom if you do give them a little care now and then (just don't kill them with kindness). Change their location or soil every few years or they will dwindle away. Give them fertilizer judiciously, taking care not to burn their roots or start rot. Planting instructions can be found in any catalog and lots of free advice is available from anyone who grows them. In choosing kinds to start out with, it is better to pick a few good ones than to take something that somebody else wants to get rid of. No matter what anyone may tell you, there IS a difference in varieties, and many of the new varieties far surpass the old ones. It is true, however, that price depends on newness and supply and that there are many reasonably priced varieties of excellent quality. When beginning, visit local gardens and pick out the varieties you like best, relying partly on your taste and partly on the advice of experienced growers. As you work with them, you will learn more and more to distinguish between good and bad characteristics. For the purpose we are discussing in this article—stretching the season—pick early, late and midseason varieties (many catalogs indicate which of these categories the plants fall into) and also choose individual varieties which are known to bloom over a long period, such as Angel Face, Chantilly, Chivalry, Dolly Varden, Rainbow Room, Anna Williamson, Tiffany, Snow Flurry, Blue Rhythm, Garden Glory, Vatican Purple, and Pale Primrose.

EVANSIA SECTION (*Iris tectorum*)

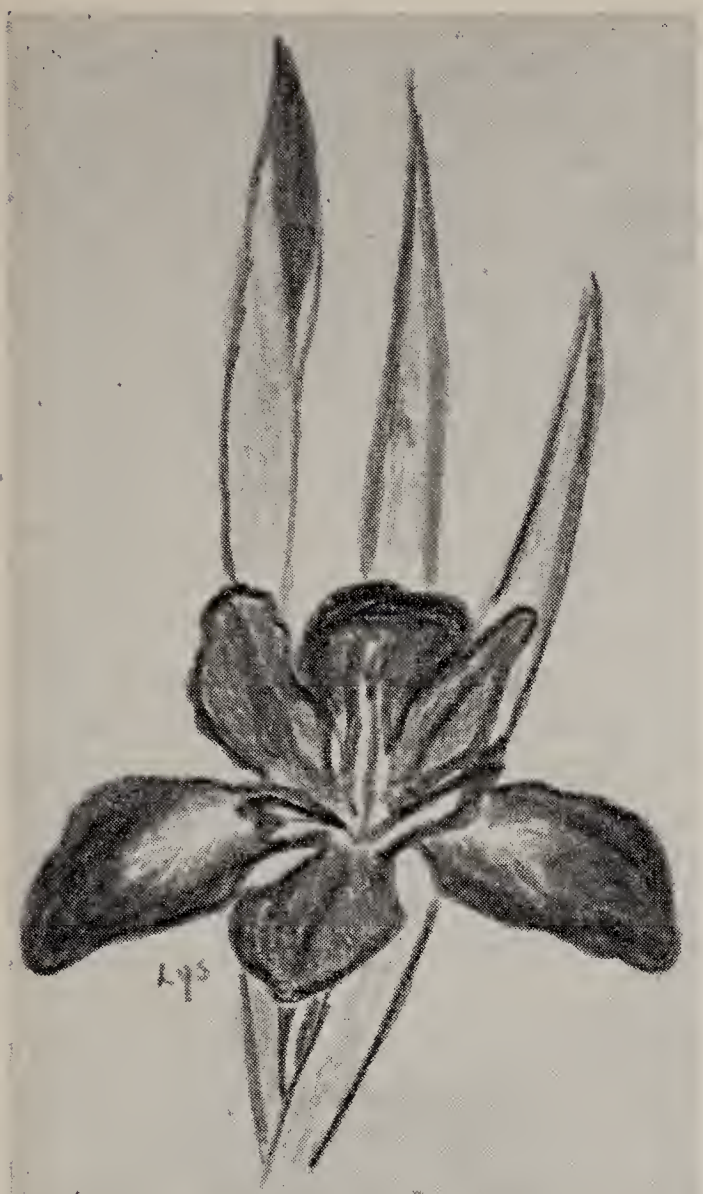
This is the famous "Japanese Roof" iris. Since we do not tend to grow flowers on thatched roofs in this country, try it as a rock garden subject but don't let it get too thirsty. The plants do not last long but are easily grown from seed, which is a good way to keep up your supply of them. They are beautiful little flowers wearing a crest instead of a beard. The type is blue and there is also a lovely white form.

Early Summer

"English" iris (really natives of the Pyrenees), Bulbous iris, somewhat similar to the "Dutch" but possibly more beautiful. Quite inexpensive and not sufficiently well-known. Treat as you do Louisiana or Kaemferi (see below). Will grow in places just a little higher and dryer, perhaps. Plant about 4 inches deep. May be lifted and stored in cool, dry place after blooming and replanted in fall.

LOUISIANA HYBRIDS

Crosses of several swampland species known to be hardy here include Dorothy K. Williamson, Mary Love, Haile Selassie, and Cajun Joyeuse. Others are being tested and show promise in spite of being natives of the deep south. Though these are natives of the Mississippi delta and used to swampy conditions, you should try them anyway if you are fascinated by them, in spite of our water shortage which will probably prevent you from growing them in a swamp.



Louisiana Iris



Japanese Iris

Pick a low spot in your garden where the water tends to accumulate when there is any (perhaps you can thus make use of a formerly useless spot), water as much as you are able, and let it go at that without worrying about it. Even more important than a lot of water is a thick mulch of grass clippings, sawdust, or what-have-you to protect the rhizomes from the sun. The Tall Bearded like the sun on their rhizomes. The Louisianas do not.

JAPANESE IRIS (*Iris Kaempferi*)

Before buying expensive, named varieties of these, try unnamed seedlings or mixtures to see if these do well enough for you to justify buying a few named kinds. The Higo type is said to be the best strain. However, some of the older ones do quite well here. You may be told that they cannot grow here, as we were, but we have had a few seasons of lovely bloom from them. It is true that they intensely dislike our alkaline soil, but if you admire their huge, brilliant blossoms of exotic form, and you have a yen to try them, the little extra care they require is worthwhile. Give them treatment similar to the Louisianas with plenty of water and fertilizer until they are through blooming. Then treat them like ordinary perennials the rest of the year. If they turn yellow too early, it is a sign of too much alkalinity, and they should be treated with aluminum sulphate. For this, try the 3 M's: Moisture, mulch, and manure.

Midsummer

VESPER IRIS (*Iris dichotoma*)

These are sold under various names by eager Eastern growers and are quite lovely and easy to grow. They are not suitable for cutting but are extremely interesting garden subjects. The tall plants which die down in winter, send out a myriad of branches

covered with little, exotic jewel-like blooms which pop open suddenly every afternoon and last only a day, to be replaced by more the next day, until summer begins to wane. These are said to grow anywhere. We have had best results by planting them behind the pool with the Louisianas and Kaempferis. They also grow well from seed.

FALL

A few breeders are working on special varieties of Tall, Intermediate, and Dwarf Bearded Iris to encourage their fall-blooming tendencies. For the most part, these are not reliable bloomers here because of our early frosts. Those which have been known to be most reliable about blooming here in the Fall are the Dwarf Lt. de Chavagnac, Intermediate Sangreal, and Tall Joseph's Mantel. If you have a bud on one of these, it may be necessary to give it some protection if a freeze is threatened. Or you may be surprised to go out some morning in late October or early November and find an iris bloom where you had not expected one. Royal Scot is another Tall which is said to be a fall bloomer in milder climates, but in four seasons I have never had so much as one fall bud. Perhaps if these were prevented from blooming themselves out in the spring, they would be more inclined to bloom in the fall — but most of us take our blooms when we can get them.

The catalogs which specialize in unusual iris list a number of interesting species which are said to bloom in December and January. They are generally not hardy here. If you want to try them, be prepared to give them the protection of a cold frame or try them in a pot in a sunny south window. If you live in Boulder, you may be able to do some things which we cannot do in Denver. We are experimenting in our garden with a number of things not mentioned in this article. The ones listed here are only those which have been known to survive and bloom with some regularity.

Sources of Supply: Some of the best Tall Bearded iris in the world are grown right here in Colorado and in adjacent Rocky Mountain states. There are famous commercial gardens in Boulder, Pueblo, and Denver where you are welcome to visit, and many non-professionals will also welcome you to their gardens if you are really interested in learning about this class of iris. Thus, there are many fine varieties available locally, and these often do better than those which come from a distance. However, if you wish to branch out and try some of the more unusual species that we have been telling you about, it may be necessary to send away for them. This writer will be glad to tell you about these sources if you will call any afternoon. (GR 7-6777.)

Since you will probably want something besides iris in your long-season garden, we'd like to suggest the following plants to accompany your iris plantings for around-the-calendar bloom:

Winter: *Tulip kaufmanniana,* crocus, snowdrops (galanthus), winter aconite, Christmas rose, violas, alyssum (sweet).

Spring: All the lovely spring bulbs such as daffodils, tulips, and hyacinths—try early and late flowering varieties; and the smaller bulbs — scillas, grape hyacinths, etc., and early perennials — arabis *Phlox subulata* and *Dianthus deltoides.* You will note that the earliest-blooming things tend to be low-growing and suitable for rock gardens.

Summer: Roses, gladiolus, hemerocallis, and all your favorite annuals

and perennials.

Fall: Chrysanthemums, autumn crocus, phlox, calendulas, scabiosa, snapdragons, stock, sweet alyssum (this last tends to bloom almost all year around). Supplement these with plantings of small shrubs that have bright leaf coloring in the fall.

If you have been thinking that we have flowers here in Colorado for only a few months of the year and have been yearning for a longer season, go ahead—don't be afraid to try a few, if not all, of the things we have suggested. As every gardener knows, we are at the mercy of the weather in this, the north INtemperate zone, but sometimes we can outwit it. And there are few thrills in life comparable with going out on some bright day in late February and discovering green spears and patches of purple velvet coming up through the snow!



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TUBEROUS BEGONIAS

By MICHAEL ULASKI

COULD it be that tuberous begonias were first used in mass plantings here in Denver? In 1933 at Elitch's Gardens I bought six tubers from a large seed and bulb house back east for trial in this climate. They grew very well after experimenting with their habits, so the next year we bought a dozen more tubers and found them to be very popular with the public for many people from other parts of the country had never seen them. We therefore decided to plant them in large beds for a bigger display. Since then, so many people have asked me about the culture of these lovely flowers that I thought this article might help answer some of the questions.

Tuberous begonias are classified into five general groups; camellia, basket or hanging, fimbriata, carnation picotee, and the ruffled novelties. All are spectacular in their beauty, and each variety is used in pot plant production or can be planted in beds or baskets. The plants may be grown from seeds, tubers, tuber divisions, or leaf cuttings. The first two means are the best and are used by most growers. Some growers germinate seeds in a medium composed of one part leaf mold, one part peat moss, and two parts sand which is placed over a one-inch layer of gravel in the bottom of seed flats. Or a seeding medium of one-third leaf mold, one-third peat moss, and one-third sandy loam is good. Whichever medium is used, it should be properly sterilized and finely sifted. Spread the seeds on top of the medium and water them in lightly. Cover the flats with glass and keep the soil uniformly moist. At temperatures of 65 to 75 degrees, the seeds will germinate in about eight days. Be sure the seed flats and young seedlings are heavily shaded. Seeds should be sown in November and December for late spring, summer, and fall blooming plants. Begin transplanting when the tiny seedlings have become large enough to be plucked out, and replant about 3 inches apart in flats. This will give the seedlings a little more room to grow. After that you may put them in small 3-inch pots or you may just plant them at the proper time from the flat right into your garden.

PROPAGATION BY TUBERS

From tubers the tuberous begonia can be made to bloom at almost any time of the year by proper application of lights for several hours each night during the winter months. The best quality plants and the greatest demand for the plants come, however, in May and June when the sunshine is usually fairly good and the night temperatures are cool. If started in pots, the tubers should be set at a slight angle to prevent rot starting in the eye of the tuber from water standing there. Some growers like to start them in flats. Be sure that you set your tubers in right side up for sometimes it is difficult to tell. A good propagating medium for tubers is a sterilized combination of sand and leaf mold, or straight sand and peat, or sphagnum. Place the tubers in the medium and barely cover them. Water sparingly until several sprouts appear on the bulbs. Do not crowd too many tubers into a flat or you might damage them when you take them out. The best temperature for propagating these begonias is 65 to 70 degrees.

In about five weeks when the stems are a few inches high, tubers will be ready to pot. Be careful not to disturb the roots too much or injure them when transplanting. The best time to start tubers for summer planting is the first week of April through the middle of April. If you plant during this period you will get a better and more compact plant to set outside in your garden after the first week in June.

From cuttings, the plants will bloom and produce tubers the first year. Terminal cuttings can be made at any time of the year. Some might like to try this way.

Tuberous begonias need a ph of 6.0 to 6.5. Guard against alkalinity. The plants thrive best, as previously stated, in a soil which is fibrous, loamy, and well drained. Another good mixture is one-third sandy loam, one-third peat moss, and one-third rotted cow manure or one-third heavy soil, one-third sharp sand, and one-third leaf mold or peat moss. It is always best if the mixture is sterilized. This is important from the weed standpoint.

When tubers are planted in pots it is necessary to have good drainage material in the bottom. Pot the tubers one-half inch deep. They may be put into 4-inch pots and then shifted later to larger ones if that is where you want to keep them, but this is not necessary if you are going to plant them in beds. A mulch of decomposed fibrous material applied on the surface of the soil keeps it from drying out. Early morning sun is all right for tuberous begonias, but sun during the heat of the day must be kept off and full shade given them. A humid atmosphere is also necessary for these plants. Moisture on the foliage during sunny periods should be avoided. Frequent watering is required and plants should be kept moist though not soggy. This uniform moisture is necessary to good growth once the plants are well started.

Another word of caution—tuberous begonias do not do well in windy locations. Pests and diseases such as mealy bugs can be controlled by using Volek. Lindane dust or spray is effective against aphids and Fermate is good for botrytis.

Tubers should be stored in peat moss or dry sand in a cool place—40 to 45 degrees. Allow old plants to shrivel. Do not break off tubers.

If you do not have a shady place to plant these beautiful flowers, as is true in my case, build a lath structure and cover it with cheese cloth to furnish shade. This also helps protect them from wind and hail.

To sum things up, tuberous begonias do have to be pampered, but their beauty is such that whatever extra must be done for them is well worth the trouble. If there are any points I have missed or any further questions you may have, just write a letter to The Green Thumb and I will be glad to try to answer them.

Have You Signed Up a New Member This Month?

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GLADIOLUS

By the late DAISY HASTINGS

"GLADIOLUS" is the approved spelling, both singular and plural, adopted by the North American Gladiolus Council and the Colorado Gladiolus Society, but most of our members just simply and affectionately call these lovely flowers "glads".

Classification Simplification

You can learn glad classification in no more than sixty seconds; then reading articles and catalogs will be much more fun.

The first figure in the three figure number always refers to size, and the second and third figure shows what color the glad is.

Glads Come in Five Sizes

Miniatures—100 florets under 2½" across

Small—200 florets 2½" through 3¼"

Medium—300 florets 3¼" through 4⅜"

Large—400 florets 4½" through 5⅜"

Giant—500 florets 5½" and larger.

For instance with the variety Bo Peep, the classification number used in all catalogs is 240. The 2 shows it is in the 200 class, and the 40 shows that it is light pink.

Color Classes

00 White without conspicuous marking	30 Salmon
01 White with conspicuous marking	36 Scarlet
06 Cream	40 Pink
10 Light yellow	50 Red
12 Deep yellow	60 Rose
16 Buff	66 Lavender
20 Orange	70 Purple
	76 Violet
	80 Smoky shades
	90 Any other color

These colors may be broken down further, but this is enough to get the idea.

Planting

In Colorado the best time to plant glads is from mid-April through May. Planting may be staggered, but it really isn't necessary, since glads bloom from 60 to 100 days depending on the variety.

In general the smalls and miniatures bloom in less days than the large ones. Plant glads about four inches deep, and leave about twice as much space between bulbs as the bulbs are wide. The easiest dip is Lysol—use one teaspoon to one quart of water, soak bulbs three hours, plant while still wet. Glads will do well in any good soil that is not soggy and that has plenty of sunshine. If manure is used, it should be dug into the soil the previous fall so that it will be well rotted, but not much fertilizer of any kind is needed.

INSECTS

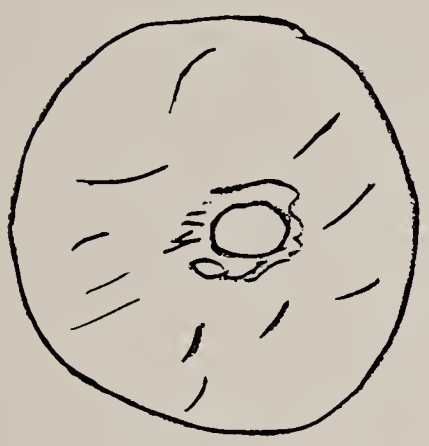
Thrips are the worst enemy glads have, but they are very easily controlled by dusting with DDT about twice a month after the glads get eight inches tall. Some glad articles have spent too much attention on diseases and unnecessary details; glads are really very easy to grow, and with just minor precautions about dip and spray, you will have excellent results with them.

Small and Miniature Gladiolus

Up until a relatively few years ago, all glads were miniature. Breeders worked diligently to make them as big as possible, until now some of the ones classified as "Giants" are seven or more inches across, and five and six inch ones aren't uncommon



No. 1



No. 2



No. 3



No. 4



No. 5



No. 6





Bulblets

Gladiola corms, natural size

at all. The hybridizers also worked to make the colors more and more beautiful, until now glads come in almost any color except true blue, and there are many violets that are almost blue.

In the last five years, the few growers who have been trying for some years to get people interested in the new miniatures and smalls have finally succeeded. In fact, so many people now demand the little fellows that the growers have trouble keeping up with the demand. The colors and shapes in this group have been improved until they are a joy to behold. One can now find ruffled or plain petaled ones, orchid shaped ones, needle-pointed or laciniate ones, any shape that the big ones come in. Some of the smallest ones face up instead of facing forward, and are especially pretty in arrangements for low tables. All of the little ones lend themselves well to arrangements, and are superb for corsages. In small houses they fill a big need. Probably the most popular little glad grown is ATOM. It is a bright scarlet color with a white edge around each petal. It makes a lovely splash in the flower border when planted by the tens or twelves, and a bouquet of it always causes comment. One of our members made a corsage of it last summer, using a silver bow. His wife wore it with a blue shantung dress which was a stunning combination.

Buying Bulbs and Bulblets

Corms and cormels are the older terms, but most all growers now use the popular terms of bulbs and bulblets. There are good growers clear across the country from the Atlantic to the Pacific, with a number of excellent growers in Denver and around the state. Buy plump, healthy looking bulbs, expect to pay a reasonable price for them, and don't fall for the

ads offering anything like 100 bulbs for $1.98.

The number one and number two sizes are called large.

The number threes and fours are medium.

Fives and sixes are small.

Expect good bloom from large; small bloom from medium; and usually no bloom the first year from small.

The smaller sizes cost less than the larger sizes, and within a few years will grow into large size bulbs.

Sometimes "Jumbo" bulbs, which are larger than number ones are beyond their prime. Most growers like to sell bulbs that aren't over two years old from bulblets to be sure of having young, vigorous ones.

While bulbs of a new variety are still scarce, it is wise to save all bulblets and grow them to blooming size in a few years to get an inexpensive start with expensive bulbs. It is also wise to save a few of your favorites each year, even the least expensive ones, so that you can always have fresh new stock coming along. Do not leave any bulblets in the ground in the fall when you dig your bulbs, because they are apt to come up the next year. Of course, if you don't grow named varieties, they wouldn't confuse you, but if you do like to call each bulb by name, you might be surprised to look out some day and start wondering where in the world that red Sierra Snow came from! Growing them by name is half the fun of it.

Seed

Glads may be grown from seed. Learning to choose good parents and then learning to hybridize would be fun. Chance seed may also be planted, but after you get the bug, you will want to know all about your own seedlings, so you won't care too much for chance seed. I tried some cross-pollinating last summer but didn't have any success.

Sources of Further Information

Read all the catalogs you can get, go to the Colorado Gladiolus Society show next August 7, read Lee Fairchild's book "The Complete Book of Gladiolus", from Horticulture House library, and talk to any member of the Colorado Gladiolus Society.

Active participation in our organization will assure an expanding membership and bigger and better issues of The Green Thumb.

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MAKE GLADIOLUS YOUR HOBBY

By DON MCAULIFFE and LEE J. ASHLEY

EARLY this spring when you get that urge to do a little digging—save some space for Glads. Choose Gladiolus and your efforts will be rewarded with a glorious array of color. Nature was in a most generous mood when she created this lovely flower, and no other flower responds more freely to a little love and care, repaying you with blossoms of such lavish beauty.

If you are a beginner in this joyful hobby, you may start with a dozen so-called mixed gladiolus. They all have names but you will not know them, as mixed collections are unlabeled.

Later you will want to pick your glads by color, which means you will learn their names and come to know and love them as you would a dear friend. There are many fine varieties which will cost you no more than five or ten cents a bulb, but as your interest and enthusiasm grows you will probably have a list of varieties you want that cost several dollars each. If you wait a few years you will be able to buy them for much less—for like most things the price of gladiolus is governed by the law of supply and demand. When a variety is first introduced, the supply of bulbs is limited; hence the higher price.

The following is a list of varieties, most of which have been grown in Colorado and have been winning blue ribbons at Glad Shows since their introduction. The number following the name denotes the size and color. The hundred part of the number refers to the size (100 miniature, to 500 giant) and the less-than 100 figure (00, 06, etc., to the color and markings).

White: SNOW CLAD 500, huge, clean-cut, starchy, alabaster white. MOTHER FISCHER 400, about the best white, this was Grand Champ at Greeley show. WHITE LACE 300, one of the most ruffled. POLAR CUB 200.

White with Blotch: WHITE SAILS 401, makes large spikes. SPARKLING EYES 401, has vivid purple blotch. CRUSADER 301 is easily the most beautiful.

Cream: CONNIE G. 506, this is one of the most beautiful. LORELI 406, was runner up in the AAGS. CREAM ORCHIDS 406 and DIVINITY 306 are both lovely. ANGELS SERENADE 306 is heavily ruffled and extra heavy textured.

Light Yellow. Here we have PROSPECTOR 410 a beautiful light yellow with buff lips. SCEPTRE 410, a pale lemon yellow self. DRESDEN 210 is a tiny pale yellow, nice for corsages. STATUETTE 210 is best for exhibition.

Deep Yellow: FORSYTHIA 512, is a different shade of yellow. GOLD 412 is best for color and nice for arrangements. CATHERINE BEATH 312 is a good show glad. GOLDETTE 212 is a small glad with the same form as the large ones.

Buff: PATROL 416, a blending of autumn colors. A. B. COUTTS 416, is much newer and a better grower. FIGURINE 217 has dark red throat mark.

Orange: REGINA 520, a blending of yellow and apricot, this is ruffled and wide open. SPRITE 320, ruffled and frilled golden orange. LITTLE GOLD 220 is the only glad with the color of the California Poppy.

Deep Orange: FIRE OPAL 422

glows like the jewel for which it was named. FORTUNE 422, a clear rich orange.

Light Salmon: KING SIZE 531, this takes the honors for being the largest. DELIGHT 430, is one of the most ruffled, a real beauty. VISION 331, is similar to Delight but more salmon. JINGLES 230, a coral salmon with white throat. BO BEEP 231, little buff-pink butterflies perched on a stem.

Deep Salmon: SALMON QUEEN 532, one of last year's top introductions. BOISE BELLE 433, old, but still a top show winner. PETER PAN 233, orange-salmon.

Scarlet: DAVID WARR 436, vivid scarlet that really stands out. RED WING 436 not so new but still winning ribbons. ATOM 236, most popular miniature. FLASHLIGHT 237 is a flashy combination of scarlet and yellow.

Light Pink: PINK PRIDE 541 is a strong grower of heavy substance. PINK DIAMOND 440, this has been my most beautiful variety for the past 3 years. PENNANT 440, a clear light pink that is very nice. LITTLE SWEETHEART 240, a medley in pink and white.

Medium Pink: PAUL BUNYAN 542 has excellent color for a super giant, florets are wide open and of good substance. FRIENDSHIP 442, one of the first to bloom, a glowing pink that will win your heart and keep it. SKALAWAG 242, deeply ruffled pink with yellow throat.

Deep Pink: SPIC and SPAN 444, not new but still the top winner of blue ribbons. ALFRED NOBLE 445, deep pink with cream throat. Grand exhibition variety.

Light Red: HILLTOPPER 450, new and of exhibition quality. POINSETTIA 450, pure light spectrum red, slightly ruffled. ZIG ZAG 251, probably the only miniature ever to win a grand champion ribbon.

Deep Red: HARRISBURGER 552, the color of ripe cherries. GARNET RUFFLES 352 a deep, dark shade of garnet. FIFTH AVENUE 252, miniature dark red.

Black Red: DARK DAVID 554, huge, velvety red, richly shaded maroon. ACE OF SPADES 454 has a glistening black sheen. RUFFLED EBONY 454 is considered the most beautiful black red. NEGUS 354 is a top show glad.

Light Rose: TRAVELER 460 has already made a name for itself in the exhibition circles. LORI DEE 460, JULIA MAE, 460 both fine light rose glads.

Medium Rose: ROSITA 563 medium shade of rose, has unusual light gray edging around petal edges that is very beautiful. EDGEWOOD 463 spire-like spikes of a wonderful form make this a wonderful exhibition glad. ELMER'S ROSE 463, sumptuously ruffled rose beauty. BONNIE PRINCE 262, brand new rose miniature.

Deep Rose: BURMA 564, deep rose red. BRENDA 464 another fine new one. ROSELYN 464, a deep rose with darker lip petal, ruffled, heavy textured.

Lavender: HEIRLOOM 566, orchid lavender that is one of the most beautiful. FRANCESCA 566, a light pink-lavender with cream throat that is one of the most beautiful glads ever introduced. NOWETA ROSE 568, twice Grand Champ of the Colorado Glad shows. LAVENDER PETUNIA 268, unusual miniature.

Purple: KING DAVID 570, deep red purple that is considered the best in this color. PURPLE BURMA 570, nice sport of Burma. WONDER BOY 470, and HAR-

RIET 370, are nice dark shades of purple.

Violet: VIOLET CHARM 476, light violet with broad darker spear. LAVENDER BLUE 576 light lavender sport of Elizabeth the Queen.

Deep Violet: SALMAN'S SENSATION 578, giant deep blue. PFITZER'S SENSATION 578, even darker than above. BLUE DEVIL 479, very striking, somewhat bizarre, medium blue-violet with red blotch.

Smoky: COPPER LUSTER 580, large, spectacular smoky-plum-rose with copper shadings. TAN GLO 480, best exhibition, smoky. SOUTHERN BELLE 493, more of a deep pink than smoky but very nice.

Any Other Color: CHEROKEE 590, rich velvety bronze with flame blotch. ERIN 490, one of the first really green glads. BAMBI 290, small, different, chartreuse-green with orange-red throat.

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CRABGRASS CONTROL

By HERBERT C. GUNDELL

ONE of the undesirable garden pests that we seem to have to live with is Digitaria sanguanilis, commonly called crabgrass.

Crabgrass is an annual weed which comes up from seed each year. Since it does not live through the winter, but dies with the first frost in late fall, the only particle of the plant that will start it again the following year is viable seed produced during the previous summer.

Crabgrass generally germinates in late May or early June and therefore does not become apparent in the lawn until late in the summer. It is a very heavy seed producer. Once the seed is produced and is lodged in the soil, it remains viable for many years. This accounts for the fact that crabgrass will appear in a lawn even though no live plants were permitted to go to seed the previous growing season.

Small crabgrass infestations can easily be eliminated by pulling the plants by hand. Crabgrass is a shallow-rooted plant and therefore will come up fairly easily if pulled up in a moderately moist soil.

Although several tested chemical crabgrass killers have appeared on the general market and seem quite effective in elimination of crabgrass, the best means of controlling this pesky grass is by having a healthy, well-managed lawn.

By a healthy, well-managed lawn we mean a Kentucky blue grass turf or some other good lawn grass turf that is mowed about two inches high every four days with the clippings left on. Good management also means a lawn that is fertilized annually with two to three applications of commercial fertilizer and which is watered at intervals of four to six days, depending on the time of the year and the season.

Among the crabgrass control chemicals that have been tested at Colorado A & M College in 1954 and 1955, the most effective control was achieved by applying 2.8 pints of 45% chlordane emulsion in five gallons of water per 1000 square feet of turf area. Two applications of this chemical appear necessary for complete control—one about May 30 and the other around July 25. Best results are received when chlordane is applied either in connection with nitrogen fertilizer or when nitrogen fertilizer is applied soon after the application of chlordane to the lawn. Second most successful chemical control of crabgrass was achieved with various products containing arsenate of lead and nitrogen. These materials also are applied at the same time as the chlordane and this combination is applied through a push-cart spreader instead of through a sprinkler can.

As mentioned above, the control of crabgrass is not a one-year program but should be continued for at least another year in order to eliminate most of the plants that may grow from the seeds of the plants that were eliminated the previous growing season. Again, the most efficient way of holding down the appearance of crabgrass is by properly maintaining a good healthy lawn.

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SPRING SPRUCE-UP

By R. W. SCHERY, *O. M. Scott & Sons Co., Maryville, Ohio*

THAT lawn may look a bit bedraggled? Whether a hangover from failure to stay on the water wagon last summer, or due to winter weeds and wants, the cure's the same. It's good seeding, generous feeding, and prompt attention to the needs of growing grass. Happily, the well-stocked garden store just around the corner puts at your fingertips accoutrements to do the job quickly, cleanly, pleasurably.

Most important, perhaps, is that spring feeding. All lawns need it. Grass, like a crop, pulls from the soil each year pounds of nutrient. Take for example nitrogen. A 10,000 square foot lawn will build into its clippings each year about 200 lbs. of protein with 3% nitrogen content. That's several sacks equivalent of the best lawn fertilizer, even where soil "bugs" help by trapping some nitrogen from the air.

The same is true for other major nutrients, and for lime. Except by soil test, there is no sure indication of sour soil and the need for lime. The spreader is a modern must for uniform feeding and liming at any odd moment. It'll pay off in precise seeding too, even weeding.

A bolster seeding should command the finest perennial turf grasses. They may appear more expensive by the package, but by seed count (perhaps 3 million to the pound) they are more economical as well as better. Don't send a boy for a man's work: look for at least 60% bluegrass, in the mix, for climates from middle latitudes northward.

Quality seed merits receptive soil. If no debris occurs, and frost has made a grit-like surface there's little worry. Seed will find lodgement in frost pocks and crevices. But if soil is slaked smooth, or shielded by old leaf remains, vigorous raking, slicing, jabbing or aerifying looms in your future. Tools there are, from simple prong rakes to powered soil spikers, aeraters, and renovaters.

Established sod, sparked by feeding, has made a comeback: thin turf and bare spots face disappearance, for bolster seeding stirs in the warming soil. The sprouting seed must be kept continuously moist, so have good sprinklers and hose conveniently handy, in case nature falters.

There may be some weeds, especially dandelion and spring creepers. After new seedlings are up to cutting height, a 2,4-D-style weeding will provide excellent clean-out. Hand digging is horse and buggy stuff, what with efficient spreader and spray equipment now readily available. Be careful 2,4-D doesn't reach budding trees—and give the trees a break with their own spring feeding.

Of course there's mowing—there always is. But today's power mowers are as exciting as new model cars. I wonder if even an electric-eye extra, that steers along the edge of uncut turf, is in the offing?

Modernity aside, grass still must follow age-old plant kingdom precepts, where ample green leaf spells success. A mower set high (at least for summer), and used frequently, avoids drastic amputation that sacrifices most leaf surface. Most any lawn resents severe scalping. Why not see mowing as a privilege? It puts man constructively out-of-doors, where man was meant to be, as master of a most attractive and relaxing domain.

PLANT EXPLORATIONS OF THE U.S.D.A.

By SAMUEL B. DETWILER

MORE than 300,000 distinct species of plants are recognized in the world, according to the Encyclopedia Brittanica. Several years ago a botanist completed eleven years of painstaking survey to learn how many plant species have appreciable value to the world. He found that fewer than 2,200 species and subspecies have economic values for food, fiber, and ornament to civilized man. In other words, the world has found real uses for less than one percent of the plants available for development. (Consider the inherent value in superior plant selections, such as the Washington navel orange, brought from Brazil by the Department of Agriculture in 1870).

The Federal government maintains an efficient plant introduction service. Plant explorers are sent to the far corners of the world to find new plants having possibilities for benefit to American agriculture and forestry. But these explorers do not work in hit or miss fashion. The first step is for an office crew of economic botanists and plant technicians to survey needs in this country, and then to furnish the explorer with all available botanical data about plants abroad that may supply this need. After new plant material is brought in, it is grown and research observations made on it in the department's plant introduction gardens at Chico, California, Cocoanut Grove, Florida, Savannah, Georgia, and Glenn Dale, Maryland, and at some of the cooperating plant-research institutions.

Home-owners are not the only ones interested in new and better plants. Nurserymen, botanic gardens, and arboreta are constantly seeking new material. Plant breeders often require exotic species for hybridizing to improve agricultural, horticultural, agronomic, and forestry crop plants. New plants for production of medicines are much in demand. At present a special project is to find a plant capable of furnishing an inexpensive source of ACTH. Golfers want new turf grasses. Soil conservationists and farmers need new types of crop-plants which can be grown on slopes usually too steep for plow-farming without damage to the land. Chemists are interested in new plants for chemurgic products, vegetable insecticides, perfumes, spices, oils, gums, and the like. Today, bacteria and yeasts, for medicines, baking, brewing, etc., are often of as great importance as the higher flowering plants.

The first agricultural service of the Federal government was in 1839, when the Patent Office began to find and distribute the seeds of new or better plants, and to publish agricultural information. In 1862, Congress established a separate division under a Commissioner of Agriculture which got full status as an executive department in 1889. The department organized its plant exploratory and introduction work in 1892. Dr. David G. Fairchild, economic botanist trained at the Kansas Agricultural College and foreign universities, took charge of the plant introduction work in 1897 and by 1933, when he retired as chief of the office, he had achieved notable results. The story of his work is well told in "The World

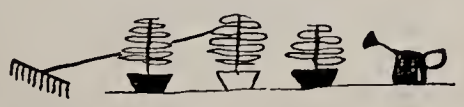
Was My Garden," and in two other books by Dr. Fairchild and his wife. (The Fairchild Tropical Garden at Coral Gables, Florida, established by his many friends, displays many rare plants brought to this country through Dr. Fairchild.)

The men who followed Dr. Fairchild in directing this work in the U. S. D. A. are plantsmen whose achievements in plant improvement merit attention in more detail than is possible here. Knowles A. Ryerson, now head of the Agricultural College at Davis, California, followed Dr. Fairchild and during World War II served as a plant specialist on the Board of Economic Warfare. After him, B. Y. Morrison took charge of the Division of Plant Exploration and Introduction. In addition to his administrative duties, Mr. Morrison has done outstanding work in breeding and selecting superior forms of narcissus, iris, rhododendron, azalea, barberry, daylily, and allium. From 1937, when Congress provided funds to establish the extensive National Arboretum in Washington, D. C., Mr. Morrison had charge of planning and directing this development. When completed, this arboretum is to be the finest in this country. One of its present attractions is the gorgeous exhibit planting of the Glenn Dale azaleas, bred by Mr. Morrison. Mr. Morrison is now retired and is presently engaged in plant breeding in his private gardens at Pass Christian, Mississippi.

Since Mr. Morrison's retirement, direction of the department's plant introduction work is in the hands of C. O. Erlanson, ecologist and plant geographer. Mr. Erlanson has furnished the writer with a short account of one of the most colorful and productive of plant explorers—Frank N. Meyer. Those who read "The World Was My Garden" will find constant references to Meyer and his genius in plant hunting.

A Hollander by birth, Meyer was trained in the Amsterdam Botanic Gardens. Here he was closely associated with the famous geneticist, Hugo de Vries when the latter was writing his book on plant mutation. Meyer not only was highly proficient in his knowledge of plants and their culture, but he had unlimited zest for searching remote regions, on foot, for plant data. In July, 1905, Dr. Fairchild was seeking just such a man to explore for plants in China. Fairchild had despaired of finding a man who could rough it and combined the qualities of not only knowing plants but of knowing which ones offered useful possibilities in the United States. Particularly, the explorer had to be very skillful in packing propa-

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gating material so it would withstand long periods in transit, and when received, would be accompanied by special notes on its propagation and probable adaptation for regions and uses in this country. Meyer was a genius in this work.

Meyer spent three years in the Chinese hinterland, travelling afoot most of the time, eating what the country offered, sleeping on the ground if need be, or in any sort of rude quarters. His next three-year exploration was in Chinese Turkestan. Then he went through northwestern China to the borders of Tibet. In 1916 he again returned to central China and had nearly completed his second year there when death overtook him.

During his years of collecting, Meyer introduced into the United States over 2,000 species and varieties of plants. Those interested will find these introductions listed and described in the published inventories of the Division of Plant Introduction, on file in many libraries. In addition, the Washington office of the Division has thousands of Meyer's letters and record cards giving exact information on where the plants were found and their behavior in nature or where in use by native people.

HINTS ON PRUNING SOME WELL-KNOWN PLANTS

By HELEN K. FOWLER

Barberry: prune out old wood only.

Currants: prune in late summer, taking out oldest canes only. Remember that fruit is produced two or three years on old wood. Heavy pruning results in small fruits, sometimes even none.

Dogwood: remove dead wood for appearance only.

Forsythia: prune in early summer, after blooming. Thin out some of the branches.

Japanese Quince: prune dead wood and unsightly branches.

Lilacs: to have special bloom, remove old branches. Cut out suckers and do not fail to remove dead flower heads. Be careful not to cut too low on these flower heads as you may cut out new buds from which growth comes the following spring.

Snowball: this bush requires much pruning to improve shape.

Spirea vanhouttei: take out seed capsules and all dead wood, also remove about half of the branches that have bloomed. This shrub is naturally irregularly graceful so do not destroy these desirable qualities.

Prunus: (Flowering Almond). Prune only for appearance.

Roses: Do this work only when the new growth can be plainly seen. For medium fine blooms prune the strong varieties on the stronger canes to five and six eyes; weaker canes to a smaller number. On the strongest of the weak ones prune to three and four eyes, and down to two or three on the weakest of the weak. In cutting roses during the spring and summer, never leave less than two eyes on any one cane. Be sure that the cut is clean and slanting and from one-quarter to one-half an inch above the bud. Always cut to OUTSIDE buds except where special direction of the growth is desired. For all plants cut out dead wood.

WHERE OUR FRUITS AND VEGETABLES CAME FROM

By L. J. HOLLAND

IT may be that I have a larger bump of curiosity than most people or it may be that the average person has wondered the same as I about the origin of the fruits and vegetables that we find in our gardens or on our grocers' shelves. It is with this last thought in mind that I am starting this series of articles.

All I ever learned in school about where our fruit and vegetables came from is that when the first Europeans came to the new world they found the natives using certain plants for food; also, it is a matter of record that the early colonists brought with them seeds of plants from their homeland. To go beyond this, one must pore over technical volumes to find where any particular species originated.

It is regrettable that the early writers have left us so little authentic information. The early explorers thought too much of gold to write much about such prosaic matters as food. Don't be disturbed if in tracing the lineage of some of the subjects, I introduce you to some of your caveman ancestors.

I think it would be a good idea to start off by introducing you to a very famous American—corn. Don't let that word "American" fool you, for corn is not indigenous to the United States and we cannot pinpoint with absolute certainty its place of origin. The first real history of corn (technically "maize") is found in the Andes of Peru, but it is thought that this type evolved from a grass that grew near the headwaters of the Amazon, having been carried across the mountains in prehistoric times, long before the time of the Incas.

It was probably several centuries before this grain, travelling by way of barter or war parties, reached Central America. It was here in the "Banana Republics" that it crossed and recrossed with another grass called Tripascum. How long it took for it to cross Mexico into our own southwest, and thence north and east until it was found in all parts of our country east of the Rockies, will probably never be known. But there is little doubt that Arizona and New Mexico have grown corn longer than any of the other states.

Sweet corn did not seem to be



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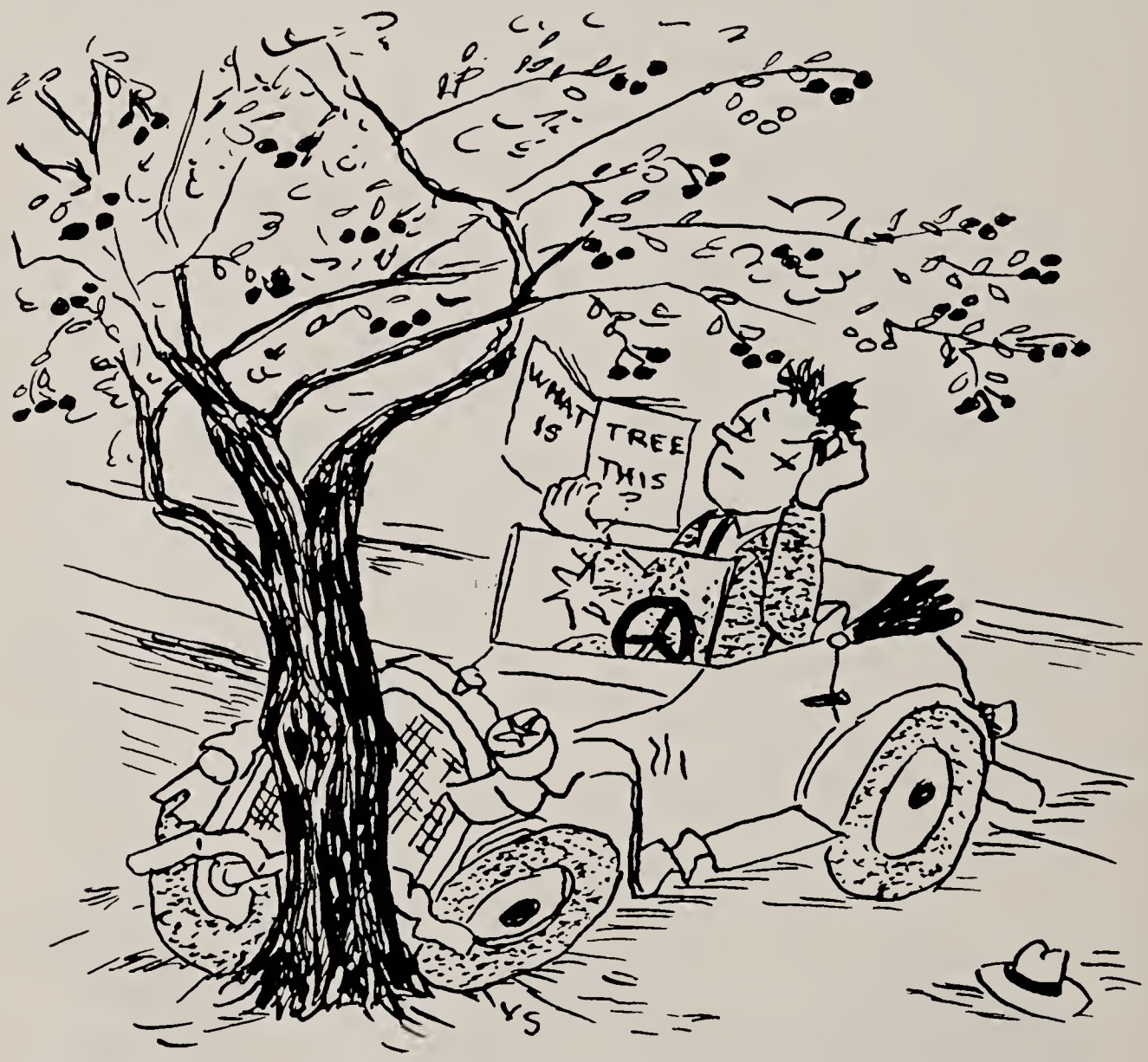
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highly prized among the Indians as a whole, for it seems that only the tribes of the upper Mississippi basin grew it to any extent. It is safe to assume that the roasting ears that the Pilgrims praised so highly were some form of yellow dent corn.

In fact, sweet corn was not mentioned in any publication until the beginning of the nineteenth century and it was not until after the Civil War that it really became popular. Now every store in the land carries canned corn at all times, and thanks to our modern transportation systems it is possible to have corn-on-the-cob for Christmas.

Popcorn was known to the Aztecs before the advent of the Spaniards, but it was not until the latter part of the last century that it achieved any importance commercially.

Although corn as a whole possibly enjoys the greatest cash value of any crop grown, corn-on-the-cob, popcorn, and hominy are still typically American, being looked upon with disfavor in some of the older countries.



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PRESERVING FLOWERS IN BORAX

NO DOUBT many of you who read this will have seen the unusual and beautiful dried arrangements including dried flowers that the Home Garden Club of Denver exhibited at the Denver Museum of Natural History. Because of their beauty and originality we thought some information from an expert in the art might be in order. Mrs. Bahm has kindly furnished us with the following formula and text for preserving flowers in borax powder.

1. Pick your flowers on a warm sunshiny day so that the material is dry. (Or fresh cut flowers from the florist may be used.)

2. Gather the flowers when they first come into bloom as this will help prevent the petals from falling after the flowers have been dried.

3. Strip all foliage from stems unless you plan to cover stem and all in the borax. Always dry more than you feel you need since there will always be some failures.

"Tools" Needed

About 20 pounds of dry, sifted borax. For flowers of the same texture such as zinnias, small marigolds, etc., have the boxes about six inches deep and as large as can be handled easily. Other boxes that can be used are milk cartons cut down, cheese boxes and any small, shallow container for individual flowers such as roses, lilies, dahlias, etc.

Method

Pour borax powder about one-fourth inch deep into the container. (Do not wet the borax.) Stand the flowers with heads (such as zinnias, marigolds, etc.) upside down in borax, gently working the powder around the petals. Be sure to keep the petals smooth. Keep working the powder around the flower head until it is completely covered. Put only enough powder on the flowerhead to cover it. It is not necessary to cover the stem.

Cupped flowers, such as jonquils, tulips and others should first either have a mound built from borax to place the cup over, or the cup should be filled with borax before covering the rest of it with powder.

Long sprays of euonymous, spiraea, peach, and plum should be placed lengthwise in borax and the entire spray covered with powder. Foliage may be left on the above sprays if desired.

Some flowers take as long as from two to three weeks to dry, while finer textured flowers, such as Iceland poppies and jonquils require much less time, usually two days will do. The only sure way to know if flowers are ready to remove from the borax is to remove one flower after a reasonable length of time and examine it for dryness. When removing flowers from borax be sure to work them out gently to prevent the petals from falling. Many wild flowers dry as well in borax as our garden varieties.

Plan the type of arrangement you wish to make before drying your flowers because you must fasten the stems to a rather heavy wire bent to the shape desired before the flowers are placed in the borax. Coat hangers are good for this purpose. For flowers with small stems run a wire through the heads of the flowers and down through the stem before drying. Medium corsage wire is right for this. Iceland poppy blossoms are heavy and stems are small so the wire helps support the blossom. Jonquils' stems become flat and very brittle so the wire helps hold blossoms and stems together.

This spring plant with these flowers in mind for drying: Delphinium, both annual and perennial; lilac, asteilbe, zinnia, marigold, flowering quince, sprays of peach blossoms, snapdragons, jonquils, Iceland poppies, tulips, spiraeas, sunflowers, roses, pansies, cosmos, daisies, asters, balloon flowers (platycodon), balsam, bleeding hearts, buddleia, candytuft, canterbury bell, herichera, lupine, cornflower, dahlia, hemerocallis, foxglove and gladiolus. These are all especially good but of course there are many more that would do as well. A word of warning about coxcombs. Do not dry these in borax but put them in a dry vase for 8 hours and then hang them upside down to dry naturally in the air.

The above are some general rules and suggestions to go by, but half the fun is experimenting, so let your imagination go. I am sure you will have many a pleasant surprise when you remove your flowers from the borax. The fresh cut flowers that ordinarily are gone in a few days can now be enjoyed for many weeks.

PEEK AT THE MAIL

Dear Sirs: I would like to subscribe to your magazine. I hope I am correct in assuming that the rate is $3.00 a year. Therefore, you will find enclosed a check for that amount.

If the magazine is as interesting as Pat Gallavan's program on the radio, and also George Kelly's, I'm sure that I shall enjoy it and find it most helpful. Thank you!

MRS. RODNEY KIRKBRIDE,
Little Bear Route, Box 41,
Cheyenne, Wyoming

Dear Mr. Gallavan: Congratulations for the outstanding issue of The Green Thumb for March-April.

Sincerely,
NOEL D. WYGANT,
221 Forestry Bldg., Colo. A&M
Fort Collins, Colorado

Dear People:

For the enclosed one dollar would you please send March-April number of The Green Thumb to my two sons who will appreciate the article on evergreens, stone walls and description of the hotel at Georgetown, where they have been. All good wishes — and *Kudos* for this nice number.

Sincerely,
MRS. IDA M. MILLER,
1766 South Franklin Street,
Denver 10, Colorado

Dear Pat: Have the latest edition of The Green Thumb and would like to have you know that we think you are doing an excellent job. All the articles are interesting, and valuable information is given in those by Lula Rose Morse, Helen K. Fowler, and Bob More. Bob has some very good pictures, too.

On Page 66, I happen to know that A. C. Hildreth is "of" Cheyenne and not Denver.

Sincerely,
G. B. BROWN, Acting Superintendent
Cheyenne Horticultural Field Station
P. O. Box 1250, Cheyenne, Wyo.

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GREENHOUSE GARDENING ONE MILE ABOVE SEA LEVEL

By PAUL R. SPENCER

THOSE who live in the Rocky Mountain Area and are fortunate enough to have a small private greenhouse are the envy of many others who aspire to be year 'round "Green Thumbers." There are many windowledge gardeners, however, who each year graduate to the greenhouse fraternity through the medium of either a greenhouse that stands alone or the lean-to type that can be attached to the side of their home or garage.

In considering the building of a greenhouse, one must remember that the east sun and the south sun are the growing suns, while the west sun merely provides light and heat. We, here in the Mountain States, are extremely fortunate in having a high incidence of sunshine throughout the year plus a low incidence of smog.

Just like all other hobbies, the ramifications of choice by those who love to grow varieties and types of flowers and plants are infinite. And in each and every instance, without exception, the hobbyists are masters of their particular branch of horticulture. There is the violet enthusiast, the cactus or succulent grower, the orchid grower, the pelargonium (geranium to you) expert, to say nothing of those who grow roses as a hobby, and even, of all things, carnations, which admittedly is "Bringing Coals to New Castle" in this area. These flowers, to name just a few, along with bringing the Old South up to this part of the country by growing camellias and other warm climate plants, are the envy of all garden club members through this part of the country where alkaline soil and dry climate are limiting factors in horticulture.

It is a great pleasure to be able to walk into a greenhouse when snow is on the ground, below zero weather outside, and be able to see lush green and full-flowering plants — to smell the damp earthiness and feel the humid warmth which stands out by contrast like an oasis in the desert.

I think there is no greater mental or physical therapy than being able to work in the earth twelve months of the year, and being able to see the fruits of one's planting come into being. The greatest satisfaction of all perhaps is to be able to give a potted plant or nosegay from your own little greenhouse to a friend. Here is where the old adage of pleasure in giving materializes.

I know of one greenhouse gardener who makes a specialty of growing various types of lettuce and herbs, tying this hobby in with cooking—practical as well as creative. To enjoy a freshly tossed salad containing lettuce and other ingredients harvested within the hour is a crisp pleasure often denied even noblemen and kings.

Then too, for those who have a yard, a greenhouse can be an economy. Early pre-planting of flats for annuals preparatory to spring "setting out" helps to have sturdier and more advanced plants with less cost. But above all there is the aesthetic thrill of creatively growing things under glass!

For specific information about greenhouses call Mr. Spencer who is Lord and Burnham's Denver representative for Orlyte Greenhouses. See March-April issue for ad.

HOME vs. ASSEMBLY LINE

By NICKOLAS DI FILLIPS

PLACING a limit on the length of an article of this nature is like sitting in on a poker game with a five-cent limit, holding four aces and only being allowed to bet one small chip. It is, however, a real pleasure to be asked to sit in even if my subject can only be touched on briefly.

Being in the business of home-building myself and teaching classes in it, I feel that today architecture in the building industry as a whole, and home building in particular, is giving way to bleak, factory-like, utilitarianism—not that utilitarianism is unimportant, but beauty and character seem to be taking a back seat. Fortunately, many home-owners are interested in horticulture and have as an objective the creation and recreation of beautiful color combinations and forms that help soften architectural lines, for proper landscaping and patio development can do wonders for a house. Builders in the residential field, on the other hand, seem to be faced with the necessity of adopting a policy of getting as many rooms into as few square feet as possible with the sacrifice of attractive architectural phases of construction because of the old "ogre" cost. Such trends in home architecture are not necessarily the fault of the architects and designers who are basically supposed to be creative artists capable of putting their visions first on paper, and then of convincing their prospective clients of the real value of the lasting beauty of the exterior of a home, but are rather due to cost consciousness and lack of education toward beauty with functionalism. Always a certain portion of the amount that can be conveniently expended on the dwelling should be assigned to the part of the structure which comes under the classification of architecture of the exterior. This should include, of course, landscaping. Automobile manufacturers realize the importance of symmetry and color in the exterior of automobiles, and while the arrangement and dependability of the interior of the car is important in the long run, the architectural exterior of the automobile is the greatest sales approach. A home by the same token should present eye-appeal solely on its exterior architectural lines and then the interior arrangement of rooms should be adapted to the individual use and the particular needs of the family.

Manufacturers of kitchen equipment have made intensive studies on the arrangement in kitchens to lessen the number of steps taken in the daily routine. As a result of the influence of wives for step-saving and labor-saving devices, the colonial home (which to me always has an air of "welcome and come on in") has given way to the contemporary home with a minimum of costly architectural and artistically appealing lines. Convenience and step-saving have had these influences on homes, but contemporary, basementless homes which eliminate the necessity of going downstairs, are slowly going back to the old conventional basements because of the convenience of having the furnace and hot water heater where they logically belong, where recreation rooms can be beautifully arranged at low cost, and where noise cannot bother those in other parts of the house.

The storage problems of the modern home with no basement are of

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little importance at the time of the purchase of the house, but as time goes on the accumulation of articles which should logically be given away are, for sentimental reasons, stored in the attic or in the attached garage. Eventual need for more living space soon requires that the attached garage be converted into an extra family room or den so that Mom and Dad may have their own television programs and not have to compete with their children's "Davy Crockett" shows. All the while the $60.00 a month Super-eight, deprived of its portion of the new home, must sit out in front in all kinds of weather, a mute testimonial to the so-called practicality of space-saving-money-saving plans!

Then, too, the goal in building homes should be not only to provide adequate shelter and modern conveniences, but to contribute aesthetically to the development of a community. Each home is an integral part of the city and plays as important a part in the development and future of the city as the moral behavior of each individual does in the community's welfare as a whole. If or when mass production completely dominates the home building industry and factory assembled homes are shipped to the site by helicopter and carefully let down on the footings and walls provided in advance, then the need for the services of the architect for individualistic homes will be over. This isn't so far fetched, for even now, architectural services centered in large cities have plans and specifications available, which, with the necessary changes to conform to local building codes, can be purchased for sums much less than the local architect would require. But the style of architecture, if such architectural services on home construction become concentrated in one large city in the United States, would then be uniform all over the country instead of being adapted to a particular locale. Yet it is just these local differences that lend charm to communities. Mass production inevitably destroys individuality.

For me, individuality and beauty are important factors and they are still important to potential home owners, too. Thus it becomes essential to use foresight in choosing the home you plan to live in for some time. Be sure to allow some reserve (over and above the amount required for all the gadgets and labor saving devices that have become such an integral part of the home) for the exterior of your home and those finishing touches that make a house not just a bundle of sticks, but one which is distinctively handsome and to which you can point with pride and say "That's *my* home!"



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The Green Thumb

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Vol. 13 JUNE, 1956 No. 5

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CALENDAR OF EVENTS

June 9 — Northern District Junior Workshop, meets second Saturday of each month. 10:00 a.m. Boulder, Colo. Mrs. W. C. Sullivan, Chairman.

June 11—Botany Club meets the second Monday of each month, 8:00 p. m. Horticulture House.

June 13—Organic Garden Club meets the second Wednesday of each month. 8:00 p.m. Horticulture House.

June 14—Home Garden Club of Denver, "June Blossom Show". Denver Museum of Natural History. City Park. 12:00 noon to 4:00 p.m.

June 14 — Suburban Garden Club Flower Show. Lakewood Grange, 2:00 p.m.

June 20 — Colorado Wild Flowers course by M. Walter Pesman thru C. U. Extension.

June 21—Columbine Garden Club Flower Show. Idaho Springs, Colo.

June 24—Denver Rose Society, Rose Show. Ford Motor Depot, 2650 E. 40th Street. 2:00 p.m. to 5:30 p.m.

June 27 — Look and Learn Garden Tour 10 a.m. to 5 p.m.

Green Thumb Program—9:00 a.m. each Saturday, KLZ on your radio dial. Pat Gallavan Horticulturist, with Bill Jones. Dale Morgan substituting for Bill Jones.

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SOMETHING NEW HAS BEEN ADDED! Have you noticed Virginia Sena's delightful cartoons and her many sketched illustrations for articles and advertisements and new art work generally for the magazine? Virginia is a relatively new member of the Association but has pitched right in, securing new members, and helping skillfully and cheerfully with articles as well. She has also kindly offered to take charge of the page for junior green thumbers.

Robert L. Woerner, director of the Botanical Garden of Denver will regularly give us the latest news from the gardens out there. Let us know how you like these new additions.



The first garden tour of the summer given May 29th for iris got off to a tardy but successful start. The next one will be June 27th and will feature roses. Chosen by the Rose Society, these gardens are sure to be prize ones. Easy accessibility in close vicinity to one another is also the keynote for these lovely informative visits, so be sure not to miss them. Tickets may be purchased at any one of the gardens. For further information call Horticulture House, TAbor 5-3410. The following are the gardens to be shown:

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We are a non-profit organization dedicated to serving the community in particular and Colorado and the Rocky Mountain area in general, so in order to be able to continue to give you valuable and pertinent (and we hope entertaining) articles in The Green Thumb as well as free information from our headquarters here at Horticulture House, we need the active support of all our members. You may help by patronizing our advertisers and by mentioning The Green Thumb to friends who need garden and landscape advise and who might not know of our free services.

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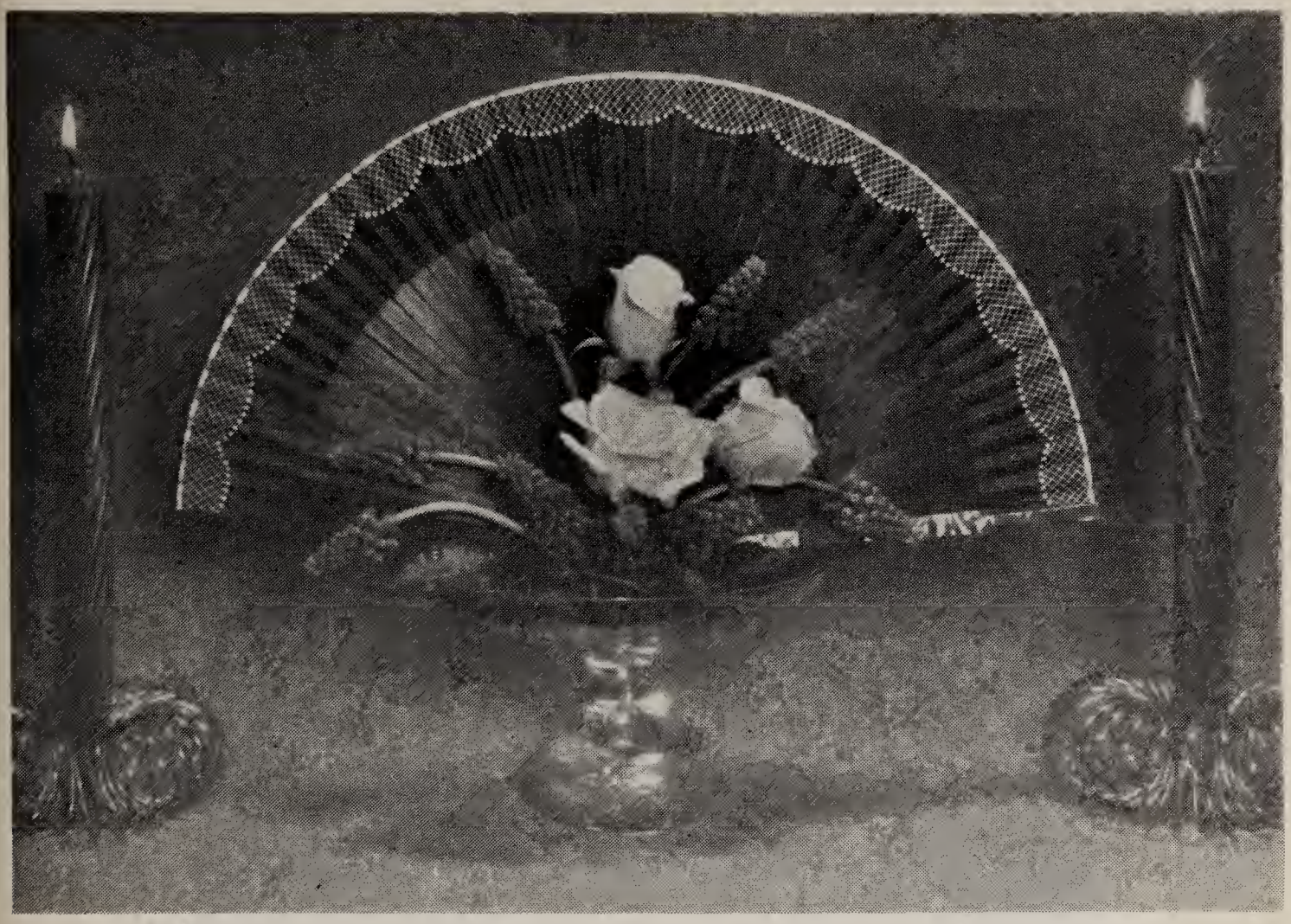
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ARRANGEMENT OF THE MONTH

By MR. AND MRS. RAY TURNURE

YELLOW roses and grape hyacinths are artistically grouped in a wide, shallow crystal bowl. Arranged for use on a side board or buffet, the background is a black, silver-tipped fan flanked on either side by black spiral candles in wrought iron and brass holders. Without the fan, the arrangement is also an effective center piece.

THE ROSE SHOW

In announcing the 1956 Rose Show to be held by the Denver Rose Society, President Erwin A. Andersen of that Society states that from all reports received by him, this Show is arousing more interest among rose enthusiasts than ever before.

Clyde E. Learned, Chairman of the Rose Show Committee, reports that the unusual interest indicated in this year's show presents a challenge to that Committee, and as a result the members are working with great diligence so that this show may be one of the most successful in the history of the Denver Rose Society. Mr. Learned states, that insofar as is ascertainable at this time, over 800 entries are anticipated in competition for nine trophy cups, the Alberta Sweepstakes award, and numerous ribbons.

The public is invited to attend and view the roses exhibited at this show, free of charge. This is one of the stellar attractions of the summer season.

Remember the time and place—Sunday, June 24th. 2:00 until 5:30 p.m., at the Ford Motor Company, 2650 East 40th Avenue.



MRS. JOHN EVANS (GLADYS CHEESMAN EVANS) RECEIVES DISTINGUISHED AWARD

AT THE recent Annual Meeting of the Garden Club of America in Colorado Springs, on April 18th, 1956, Mrs. John Evans received the Amy Angell Colier Montague Medal "For Civic Achievement."

This is a coveted National Award and we rejoice that Mrs. Evans' accomplishments through the years have been thus recognized.

Mrs. Evans' presidency of the Garden Club of Denver was followed by eight years (1944-1952), as President of the Colorado Forestry and Horticulture Association.

Through her thoughtful generosity the Association has been allowed the use of its present attractive headquarters.

Under her able leadership Horticulture House became the center of many activities.

The Helen K. Fowler Library, the largest Botanical, Horticultural and Gardening Library of the Rocky Mountain Region was assembled and housed here.

The Association's Magazine, "The Green Thumb" was started.

The staff of the Association was enlarged and a radio program was initiated.

The Charles Lothrop Pack Foundation was persuaded to make an authoritative report on Colorado's Forests, and the Association took an active part in efforts to establish State Parks.



In 1952 Mrs. Evans presented the City of Denver with a detailed plan for a Botanic Garden which has become a reality, and she is now heading the Board of the Denver Botanic Gardens Foundation.

Her tireless efforts in the selection of working committees and her ability to make these committees function have been crowned with outstanding success.

It is indeed fitting that these civic accomplishments should be recognized beyond the confines of our local community.

We salute Mrs. Evans.

ANNA R. GARREY

CONSERVATION STAMPS

AT last our postoffice department has approved the issuance of three commemorative stamps picturing our native wildlife. The first of these stamps, picturing the wild turkey, was issued at Fond-du-lac, Wisconsin on May 5th. The second stamp featuring the prong-horn antelope will be issued on June 22nd, at Gunnison, Colorado, on the occasion of the state meeting of the Izaak Walton League. The 3rd stamp will be issued at Yakima, Washington, the date as yet undetermined. This stamp will picture the King salmon. We urge everyone interested in conservation to make generous use of these stamps, so that we may hope for others next year.

THE INDISPENSABLE GROUND COVER

WITH more and more emphasis being placed on creating durable, easily kept-up, but distinctive gardens for the semi-arid conditions of Colorado, ground covers are really coming into their own, for among them there are plants to fit every need; especially for such difficult locations as sun-baked south slopes, shady moist spots, and the bare ground around stepping stones.

Dry Locations

Most of us are familiar with rock gardens, and while we may not know the scientific names of the various sedums usually associated with these gardens, we are acquainted with what sort of plants the sedums are. What may not be generally known is that many sedums (and other plants usually confined to rock gardens) can be effectively used as ground covers in difficult, hot, dry places where a lawn is an impossibility. Hen and Chickens (*Sempervivum*), is not a sedum, but is a case in point. Profuse spreaders, these neat little rosettes will thrive on hot sandy banks that would normally be bare. For variety and color, *Dianthus deltoides erecta* could be mixed with *Sempervivum*. Dianthus grows only 3 inches high, blooming from June to frost with bright red flowers. It too likes full sun and dry soils, but will grow in the shade. A new dwarf variety of Dianthus is Dwarf Sammy growing only 1½ inches high. Both make a thick compact cover as does Lippia or "Native Verbena" (*Phyla cuneifolia*).



Hen and Chickens *(Sempervivum)*

Also classified as a fast spreader and good in dry soils is Sedum spurium coccinium (with red flowers, low growth) or Sedum spurium album (with white flowers, low growth). Dwarf variegated honeysuckle with mottled yellow leaves is attractively different, but doesn't spread too rapidly. And for texture contrast, there is a beautiful silvery blue ornamental grass, *Festuca glauca,* that keeps its color the year around. A small clump will thicken rapidly and then may be divided and replanted for further propagation.

If you have an area that you want covered quickly with only one kind of cover, the grey-leafed, white blossomed *Cerastium tomentosum* is practical. It will cover everything—almost becoming a weed. Its growth habit is a relatively low 6 inches. *Euphorbia* (slightly higher at 10 inches) will do the same. *Euphorbia polychroma* blooms through May with a striking yellow, misty bloom and *Euphorbia cyparissias* is particularly excellent under dry conditions

along with silverleaf (*Potentilla anserina*) which has a charming little yellow flower much like a buttercup. *Geranium sanguinium* covers the ground with a luxuriantly thick, dark green foliage, a perfect setting for its lovely miniature, poppy-like flower in fuchsia color.

Generally, ground cover is thought of as a low compact mass, but many relatively high plants can be used for variety, such as shrubs, semi-shrubs, and perennials, as well as ferns of all kinds, columbines, funkias, and saxifrages. Some of these taller plants might be more practical and more satisfactory than the low creeping ones, particularly for steep south banks. Larger scaled plants tend to hold the soil better, are more striking, and require less care. Try such plants as shrub roses —Shining rose (*Rosa nitida*), Prairie rose (*Rosa setigera*), or Hedge rose (*Rosa rugosa*). These do well in shade also but the last, Max Graf, a hybrid, with its far-flung, deep sprays is ruggedly hardy and unequalled for sunny, steep, south banks. Spireas are lovely too for such a location.

Some plants, in between the higher shrubs and the low spreaders in size, would be Hall's honeysuckle, *Veronica incana,* bleeding hearts (which like some sun but a good soaking too), *Sedum spectabile rosea,* and *Campanula carpatica.* All these are flowering and some such as *Campanula carpatica* will bloom from June through August.



Lippia or "Native Verbena"
(Phyla cuneifolia)

As a final suggestion for hot, dry, sunny, south banks, attractive combinations can be made by using as many native, drought-resistant plants as possible. Yucca, cactus, Oregon grape (*Berberis repens*) and ribbon grass (*Phalaris arundinacea*) mixed with the previously discussed plants would give texture and interest to a slope. Don't forget kinnickinnick, a



Silverleaf *(Potentilla anserina)*



Euphorbia polychroma



Geranium sanguinium



Ribbon Grass *(Phalaris arundinacea)*

native difficult to start but hardy and drouth-resistant once established. An artistic example of arid slope landscaping designed by George Kelly, may be found around the Golden Lantern on Colorado Boulevard.

MOIST LOCATIONS

For those of you who have moist, shady spots in need of cover, there are dozens of selections. Periwinkle or myrtle is an old stand-by of course, as well as violet and lily-of-the-valley. The ivies are always good—ground and Kenilworth. Around pools in moist soil, moneywort (*Lysimachia nummularia*) is good, or creeping thyme, a tiny dainty little plant with a refreshing odor when crushed. *Sedum rupestre* and *Sedum hybridum* stay green all winter as does the periwinkle mentioned above and *Euonymus kewensis* which is a lovely, low-growing cover for small confined spots. It does not spread or grow rapidly, however. Primulas are beautiful but they *must* have shade. For additional beauty combine them with forget-me-nots.

Two reliable covers in the Ajuga group are *A. genevensis,* and *A. brockbanki* both with flowers of heavy blue hue. Well-deserving of favor is the snowdrop anemone and sweet woodruff (*Asperula odorata*) with its star-like white blossoms. Incidentally, the flowers and leaves of sweet woodruff, "Waldmeister" in German, steeped in Rhine wine make the celebrated Mai Bowle or May Drink. Leave the natural mulch of fall leaves on the ground to simulate a forest floor, for "Waldmeister" means "Master of the Wood," giving the key to its preferred setting.

Violas and wild strawberries too add interest in moist shady areas and Bishops weed, with its attractive yellow-edged leaves, will cover quickly almost becoming a weed as its name implies. Leadwort (*Ceratostigma plumbaginoides*), low-growing with blue flowers, blooms in late fall until frost, preferring partial shade and sun. It makes a dense mat of thread-like roots with appealing foliage. Use pink armeria for contrast, but put it



Snow-in-Summer *(Cerastium tomentosum)*



Bishop's Weed

in well-drained garden soil and full sun.

No article on ground covers would be complete without mentioning Pachysandra. It doesn't really do well in this climate but if you would like to see what it looks like, go to the north side of the Museum of Natural History in City Park. For those who have a bump of curiosity for the unusual, ask Dr. Hermann to show you his Phacelia. Enough said.

STEPPING STONES

A good filler for between and around stepping stones is creeping phlox (*Phlox subulata*) in Vivid (red), Emerald (purplish), or May Snow (white). Sweet alyssum, an annual, is also nice both in the white and the purple varieties. *Sedum ewersii* and *Sedum kamchaticum* variegated make dense mats. Mother-of-thyme (*Thymus serphyllum*) is ideal with



Sedum kamtchaticum

its tiny leaves and delightful odor when crushed under foot. It needs moisture and sunshine however, to do well. Many such low-growing herbs as the Mother-of-thyme, when used imaginatively for their fragrance, make a garden the truly refreshing, relaxing place it should be.

Further information on ground covers may be had by reading the 1952 December and March issues of The Green Thumb containing the excellent articles of Helen K. Fowler. Call Horticulture House if you do not have these back issues. Further assistance may be had from M. Walter Pesman, landscape architect, Mr. Hoy of Iliff Gardens Nursery, and Sue Kelly of the Cottonwood Garden Shop all of whom generously helped compile this article.—MELANIE BROWN.

The longevity of wood must be measured in thousands of years, reports the National Lumber Manufacturers Association. Wood models and figurines 6,000 years old have been found by archeologists in the tombs of ancient Egypt. In fact, glued wood panels were interred with the body of King Tut, according to archeological discoveries. Most historians agree that the oldest wooden building in the world today is the 1,349-year-old Horyuji Temple at Kyoto, Japan.

FROM PASTURE TO PACKAGE WITH BLUEGRASS

By R. W. SCHERY,
O. M. SCOTT & SONS CO.

A PAST Lawn care pamphlet featured Bluegrass' conquest of America (132: *Kentucky Bluegrass—Pioneer Extraordinary*). This rugged individualist is still moving west. Kentucky bluegrass has taken over abandoned flat lands in the Dakotas, site-seen Yellowstone, and sent seed to market from unsown stands in high plain's haunts along the high-road for shivery Canadian blows that descend on established bluegrassland and "make weather" east of the Missouri.

Of course some bluegrass has been chosen for prosaic farm-type existence at West Coast locations. But this provides small part of the seed that becomes fine lawns in the northern half of the nation. Bluegrass needs little such help from man. It's not a spiritless domesticated species to be coddled like corn! There's still the gypsy and a touch of wildness in Bluegrass, and the species stands ready on its own initiative to heal green the scars of man's agricultural attempts in this wind-swept prairie country.

With so staunch and independent a grass, man goes out to seek the seed just as man has ever done in the world's less complex years. Bluegrass harvest today remains a dwindling reminder of a well-built but passing way of life, like the covered bridge over Darby creek.

Within a thundershower's reach of the old Santa Fe crossing are several Missouri firms, capitalized with thousands of bluegrass seed strippers. Each year at bluegrass seeding season these machines are deployed as far west as Montana, as far north as Manitoba, and are joined in the field by thousands more from smaller bases "up river." Pulled three in tandem behind a tractor, the whirling spike-studded cylinders knock ripening seed from bluegrass seedhead into the hopper. Collected seed and attendant chaff undergo a few weeks cure windrowed in sun-drenched yards before being sacked, well-dried, for final threshing and cleaning in Kansas City or points north.

Kentucky is an isolationist in bluegrass seed production, differing from the West in certain methods. In an area near Lexington, farmers have been pasturing on the most famous bluegrass lands of the nation for many generations. Here an intensive system has evolved, with a different style stripper used. Each June machines too bulky for the far-flung operations of the west, are pulled through the rippling sea of bluegrass, combing seed from the ripening stalks by a series of toothed bars rigged to lift through the auburn heads. Curing and cleaning follows, as in the West.

Bluegrass seed production and pasturing are incompatible from late April into June. This is no problem in the North, for there most land is meadow, the fields being mowed for hay after seeding time. In Iowa, Missouri, and Kentucky a farmer must hold his cattle from the fields to allow seeding shoots to develop. Seldom would the price of seed justify fields in bluegrass here, were not grazing a complement from June until the next April. On highly pressured lands, as near Lexington, progressive farmers now fertilize the grass, spray for

weeds and insects at seeding time, have more (and better) seed and pasture both.

It's quite a game, getting the bluegrass seed crop. One has to guess first where it'll be thickest, and hence most economical to collect. Then lands are leased or agreements made. Next strippers move in, from as much as a thousand miles away. A few hectic dawn-to-dusk days when seed is just rightly ripe, and the strippers move on to their appointed task elsewhere, leaving behind a wake of hay-scented curing yards and exhausted seedsmen.

Those are a fiercely competitive and sleepless few weeks, from bluegrass' first golden blush of maturity in Missouri, until the Canadian crop too is in. Ripening proceeds northward at the rate of roughly 13 miles each day. When seed is plump and ready there are only two or three days to collect it: Too early and there results immature seed of low value; too late and there is loss from seed shatter or fall.

Against proper timing, the bluegrass collector has risked his precious hours and the possible idleness of expensive equipment that knows no other purpose than a few weeks work each year collecting bluegrass seed.

Quite a grass this bluegrass, that fights its own battles against more pampered crops, and raises each June its tawny seedheads to the stripping machines of the equally rugged seed gatherer. The better lawns of America attest to the worth of such adventure in free enterprise that each June descends into parts of Kentucky, Missouri, Iowa, Nebraska, the Dakotas, Minnesota, Manitoba and the other bluegrass harvesting states.

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CAMEL OF THE PLAINS GRASSES

By JAMES DIXON

BUFFALOGRASS (Buchloe dactyloides) is a sod-joining, fine-leaved, native perennial. It is a short grass, indigenous to the heavy soils throughout the western and central Great Plains region. Generally, it grows to a height of 4 to 6 inches, producing leaves 1/8 inch or less in width and 3 to 6 inches in length. Its numerous stolons spread quite rapidly, soon producing a dense turf. During the growing season which extends from May through August, the foliage is a grayish-green turning to a light straw color when growth ceases.

For the non-irrigable section of its habitat, buffalograss has no superior. Until recently, the only practical method of propagation was by sodding which was too costly to allow its being used more. However, with the development of more adequate harvesting machinery, improved selections of buffalograss, and improved seed treatment, more seed has been made available. Also, successful methods of establishing buffalograss from seed have been developed so that this year's grass is now being used and recommended for such areas as airports, golf courses, athletic fields, highway developments, cemeteries, and dry-land lawns in sunny locations.

SEED TREATMENT

Buffalograss seed which is not treated has a normal germination of 10% or less the first year after harvest. If the seeds are soaked in a 0.05% solution of salt peter for 24 hours, followed by chilling while wet at 40 degrees Fahrenheit for 4 weeks, the germination is increased to about 50%. Where the use of buffalograss seed is contemplated, it is recommended that treated seed be used.

TIME OF PLANTING

The planting season for buffalograss extends from April 10 to June 30. Where water is available, the planting season may be extended to mid-July. Fall plantings should not be made after the 15th of August.

RATE OF PLANTING

For home lawns, seed should be sown at a rate of from 1 lb. to 2 lbs. per 1000 square feet. The seed may either be broadcast by hand or sown in rows. Since buffalograss does not tolerate shade, sowing in rows is perhaps the fastest method of obtaining complete turf closure, and it also provides the best means of weed control. If the row method is used, the rows should be spaced 6 to 10 inches, and the seeds about 1/2 inch apart in the row. It is obvious that closer spacing of the rows will result in faster coverage. Coverage is usually complete in one season.

DEPTH OF PLANTING

One of the most common causes of failure in new plantings of buffalograss is planting it too deeply. For best results, the average optimum depth to which buffalograss should be planted is 1/2 inch.

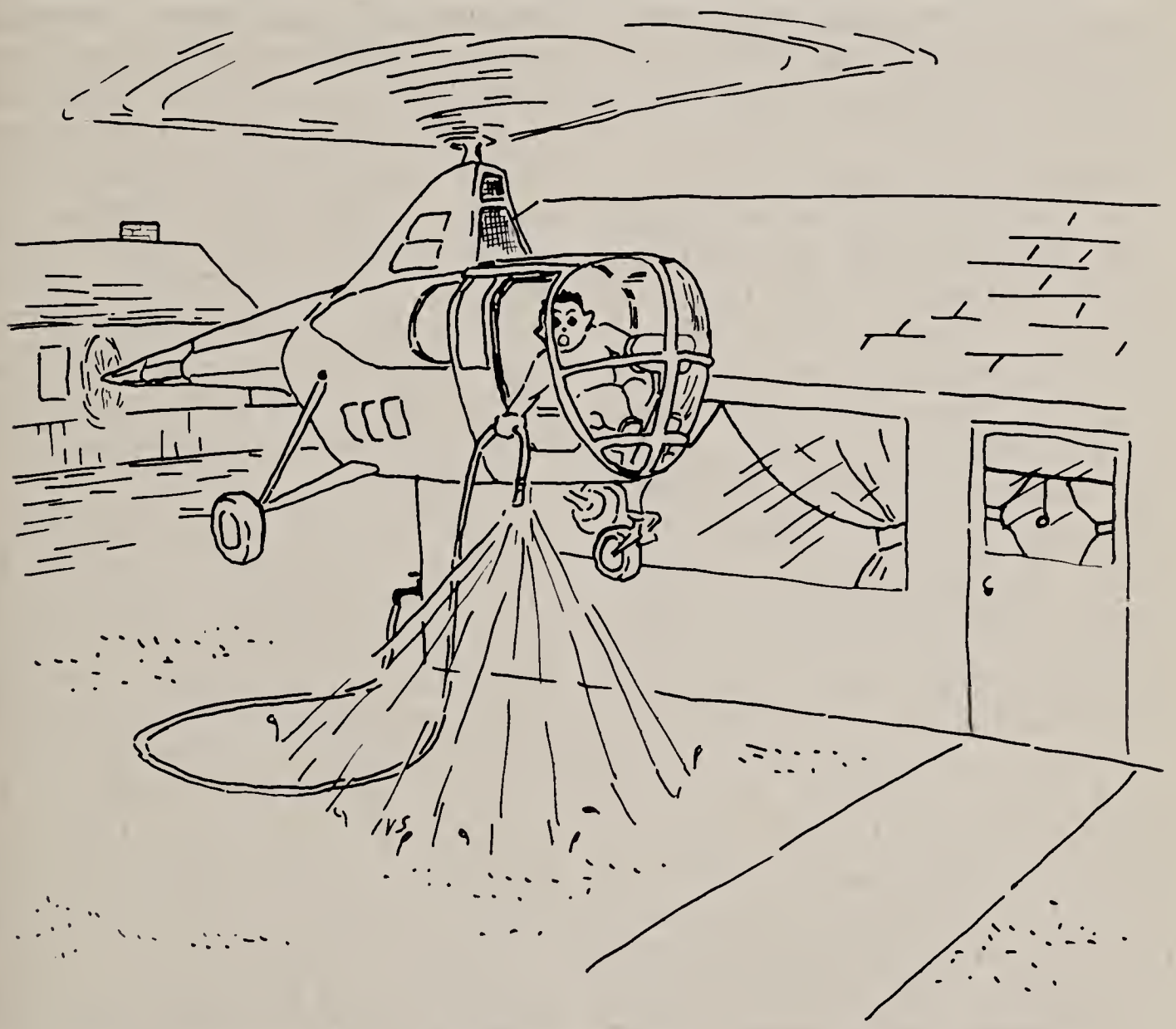
SEEDBED PREPARATION

The soil in which buffalograss is sown should be well prepared, carefully graded, and as weed-free as possible. The ground should be rolled prior to planting to insure having a firm and level seedbed. After sowing, it is advisable to roll the seedbed again to firm the ground around the seed.

WEED CONTROL

The presence of weeds constitutes a most serious hazard to any new buffalograss planting. Broadcast plantings will need to be mowed several times the first season to reduce shading from excessive weed growth and to eliminate competition for moisture from these weeds. In row plantings, it is easier to control them by hand or with a hand-tool while the seedlings are still young. Once the plant begins sending out stolons, cultivation for weed control with a hoe or other hand-tool is harmful since it loosens the stolons and encourages erosion. If at all possible it is best not to mow the grass the first year, but mowing for weed control is less detrimental than allowing them to grow. Do not water excessively as this practice encourages weeds. After the first season, the plantings should be clipped to a height of 1½ inches to 2 inches.

Buffalograss is highly drought-resistant once it is established. By prudent use of water on the new plantings, growth and attractiveness of the grass will be materially aided.



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ZOYSIA, A PROMISING LAWN GRASS

By SAMUEL B. DETWILER

DAVID FAIRCHILD, for many years the head of plant introduction work in the U. S. Department of Agriculture, calls attention to Zoysia in his book, "The World Was My Garden" (page 253): "Everywhere in the gardens about Tokyo," says Fairchild, "I saw quantities of Japanese lawn grass, or Birodoshiba, (*Zoysia pungens*), which was used for making a beautiful, velvet-like turf among the rocks. I sent a turf to Washington." In the fifty years from 1901 to 1951, the office of Plant Introduction brought 43 different lots of *Zoysia,* from Japan, China, Korea, Manchuria, and the Philippines.

Botanists have now separated *Zoysia pungens* into two species, known as Manilla Grass (*Z. matrella*) and Korean or Japanese Lawn Grass (*Z. japonica*). A third species, all that so far are introduced, is called Mascarene or Velvet grass, (*Z. tenuifolia*). All three species are low-growing, creeping perennial grasses having fine, compact foliage that makes them useful for lawns in their climatic ranges. Bailey's Cyclopedia of Horticulture describes Velvet grass in the following terms, which apply about equally well to the two other Zoysias: "It grows so thickly that it will smother out any other plant, even Bermuda—or 'devil'—grass. Even if frozen it will come up from the roots. It needs little water, no cutting, will run out all other plants, will not become a pest as it sets no seed in California, and is lovely in appearance. It is so fine that it may be pulled into thousands of pieces to the square foot and every little piece will grow, so that a small quantity will plant a large area."

Individual plants of Zoysia tend to vary greatly in their vegetative appearance and characteristics. The writer has grown a number of selected strains of *Z. japonica* and *Z. matrella* over the past twenty years, and at one time potted over 9,000 separate seedlings of *Z. japonica* to observe the variations in their development. Since 1950 the writer has tested one selection of *Z. matrella* from a strain first tested at the Plant Introduction Garden at Savannah, Ga. It has withstood the winters in Boulder well, and shows somewhat greater drought resistance than Kentucky blue grass sod. Also tried out at Boulder since 1953 are plantings of the noted Z-52 selection of *Z. japonica,* along with a number of seedling *japonica*. This spring a small planting of Emerald Zoysia will be made in my Boulder garden. The latter selection is a new wide-cross hybrid that is said to be superior to its parents, *Zoysia japonica* and *Zoysia tenuifolia.*

Emerald Zoysia was developed recently by Ian Forbes at the U.S. D. A. plant industry station, Beltsville, Md. According to Science News Letter, this hybrid is winter hardy, has fine leaves, and produces a dense turf. One of its parents, *Z. japonica,* is very hardy, similar to *Z. matrella.* The Mascarene Grass, *Z. tenuifolia,* has been grown in California and Florida but not extensively elsewhere. If the Emerald Zoysia proves hardy in Colorado, it is likely to prove to be a top-notch lawn grass here. But even with Z-52 and the Manilla grass for our Colorado lawns, we have new lawn grasses which should be a boon to many homeowners, especially those not wishing to do a lot of lawn sprinking.

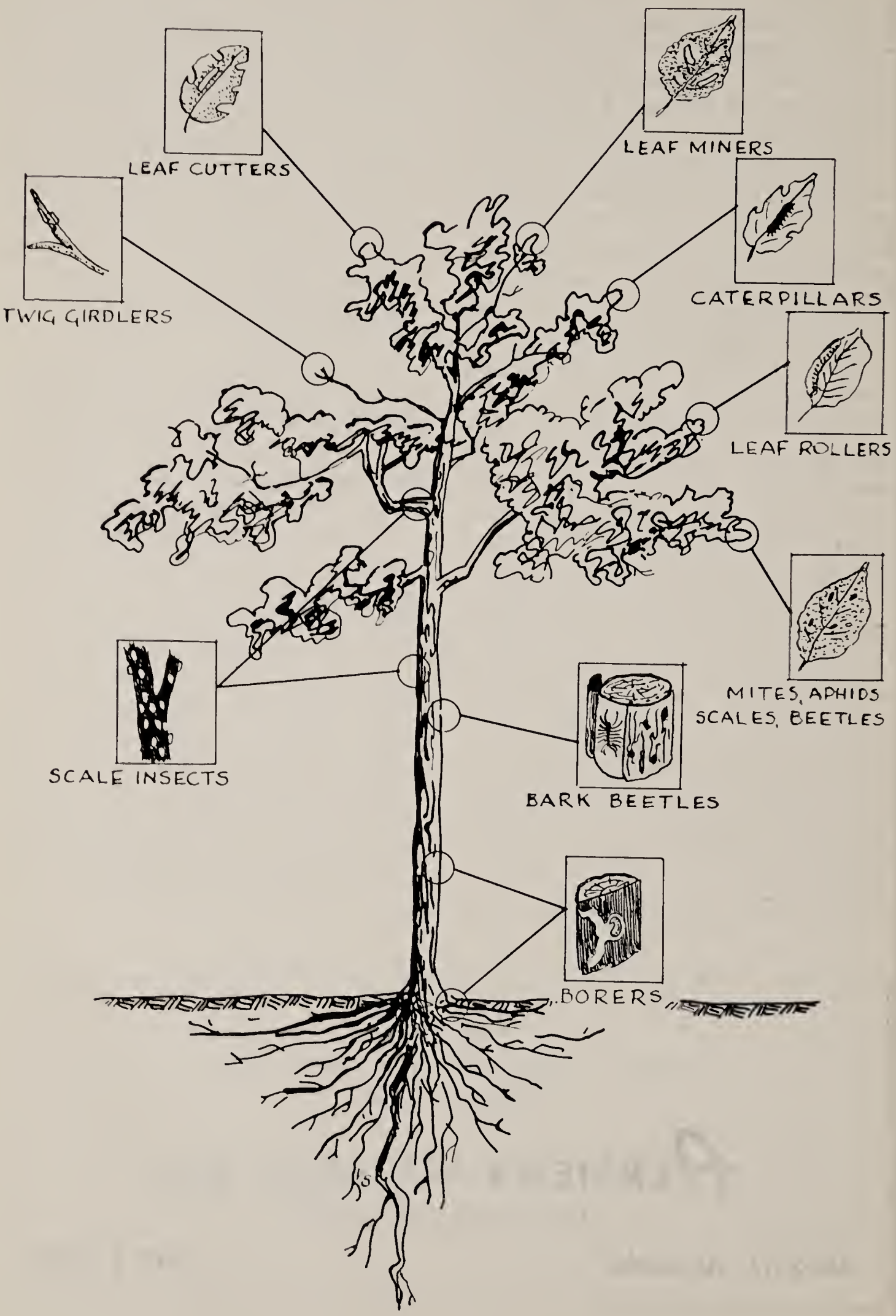
The Zoysias grown in the United States seem to produce little or no seed crops. An announcement several years ago said that application of borax helped to induce seeding in Zoysia. However that may be, Zoysia seed is scarce and hard to buy, but since the end of the Korean war, some seed importers occasionally have a supply of *Zoysia japonica* seed, but *Z. matrella* seed is seldom available. But, as already stated, Zoysia seedlings are highly variable in their individual characteristics. So the customary method of propagating the Zoysias is vegetatively, by setting out "plugs" (cylindrical pieces of sod about 2 inches in diameter), or by "sprigging". The latter involves tearing the sod apart into very small, rooted bits, and setting these bits close together in rows 6 to 10 inches apart. The Zoysias spread over the soil by sending out surface runners in all directions from a planted plug, block of sod, or from the sprigs. With the plugs set 12 to 15 inches apart, or the rows of sprigs spaced 6 to 8 inches apart, it requires about two years in Boulder for the runners to knit together into a tight sod. And some Zoysia growers are now selling the runners of Z-52 instead of plugs. These runners are planted continuously in the row, laid flat, and well anchored in the carefully prepared garden soil. A small plot of Zoysia started thus becomes a nursery for more extensive plantings in later years. Like any other lawn, the rate of growth of Zoysia increases with the degree of soil fertility. However, the Zoysias seem well-adapted to almost any soil type, possibly doing best on a loamy or moderately sandy soil. But even with a compact, quite alkaline soil, low in fertility, the *Zoysia matrella* has done surprisingly well in Boulder, even after winters where the temperature fell to 20 degrees below zero.

Like most things in life, Zoysia has its drawback for lawn use. During drought without watering, the Zoysias remain bright green when Kentucky bluegrass is burned brown. But with the first heavy frost in the Fall, Z-52 is as brown as drought-burned bluegrass, while *Z. matrella* turns a bronze color till winter sets in, then both Zoysias remain a greyish-brown until about ten days after bluegrass greens up in the Spring. But, a compensating advantage is that the Zoysias tend to grow only 4 to 6 inches tall, even if not mowed, and they require less mowing than a bluegrass lawn. Emerald zoysia may possibly make an acceptable lawn without any mowing throughout the season.

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INSECT PESTS OF TREES AND SHRUBS

By P. J. GALLAVAN



ALTHOUGH great volumes have been written about the insects that attack plants, research and the development of new materials for their control has altered, and in many instances rendered obsolete, data written in recent years. Even if this were not the case, the need today for information concerning these agents of destruction is great, particularly in regard to those occurring on ornamental trees and shrubs.

The great majority of new home owners who are gardening for the first time, know little or nothing about the hoards of pests that have already invaded their gardens or those that will in succeeding months.

This article is intended for the novice and will try to point out the more common insects that attack ornamental trees and shrubs and will suggest methods for their control.

To do this, an attempt has been made to answer these basic questions: Where on the plant are these various insects likely to attack? When are they apt to appear? How can they be controlled? These questions confront the beginner and must be answered before adequate control can be effected.

The accompanying illustration was prepared to indicate where a particular insect is likely to attack. While it shows where they will occur on trees, the same general principal is applicable to shrubs. A glance at this drawing will show that the majority of the insects attack the foliage and the tender twigs. It is therefore suggested that weekly inspection be made of these parts of your plants throughout the summer months. Make this inspection part of your regular garden routine, for early detection of these pests can prevent serious damage to your trees and shrubs. Pay particular attention to evergreens and roses as they are quite susceptible to attacks of spider mites and aphids. Evergreens can be checked for mites by holding a piece of white paper beneath a branch, shake the branch briskly so that any mites present will be dislodged onto the paper. Although they are very tiny, their movement can be detected on a white background. On roses and other shrubs check both sides of the leaves and the flower buds.

The following list will answer the questions of when the insects are likely to appear and how they can be controlled. It lists the insect, the plant it attacks, the period of infestation, the type of damage, and the recommended control. Please note that in many cases the dosage of a particular insecticide is omitted because it is formulated at different strengths by various manufacturers and the proportion would vary with the brand name bought. In all cases it is recommended that the manufacturers directions and cautions on the label be read and followed very carefully. Practically all injuries to plants and animals caused by insecticides have been traced back to human carelessness.

APHIDS

Plant attacked: Most trees, evergreens and shrubs.

Type of insect and injury: Small soft bodied insects, louse-like in appearance which vary in color. Weaken plants by sucking sap, presence is indicated by sticky deposits on leaves, or discoloration and curling.

Control: Malathion, use as directed by manufacturer, or nicotine sulfate 1 tsp./1 gal. water/1 tsp. soap.

SPIDER MITES

Plant attacked: Junipers, spruce, fruit trees, shade trees and shrubs.

Type of insect and injury: Very minute spider-like insect, red, yellow, and brown in color. Can be seen as moving specks on white background. Weaken trees by sucking sap, cause discoloration and leaf fall.

Control: Malathion and ovotran in combination, or sulfur.

SCALES

European Elm Scale

Plant attacked: Most species of elms.

Type of insect and injury: Small soft bodied insect covered with an oval, reddish brown scale with white fringe. Causes general weakening of tree by sucking sap, and sometimes causes death of limbs.

Control: *Dormant spray* Miscible oil 1 gal./15 gal. water.
Summer spray D.D.T. 25% emulsion/2 tbsp./1 gal. water. Apply during crawler stage, (first 3 weeks of June).

Oyster Shell Scale

Plant attacked: Lilacs, dogwood, poplars, cotoneasters, and others.

Type of insect and injury: Oyster shaped, brown to grey. Scales resembles miniature oyster shell. General weakening of trees by sucking sap.

Control: *Dormant spray* 8% Miscible oil.
Summer spray, apply during crawler stage (first of June) 4 tsp. 25% D.D.T. emulsion plus 2 tsp. 50% Malathion.

Cottony Maple Scale

Plant attacked: Maples.

Type of insect and injury: Appears as tiny tufts of cotton along branches in spring. General weakening, by sucking sap.

Control: *Dormant spray,* 2% Miscible oil.
Summer spray, Nicotine sulfate, or D.D.T. & Malathion.

Putnam Scale

Plant attacked: Elm, linden, wild plum and plum.

Type of insect and injury: Flat, scurfy scale with red top. Weakens trees by sucking sap.

Control: *Dormant spray* 6% Miscible oil.

Pine Needle Scale

Plant attacked: Spruce, pine and fir.

Type of insect and injury: Small white, pear-shape scale. Weakens plant by sucking sap, and causes needle drop.

Control: *Dormant spray,* Lime and sulphur 1 part to 10 parts water.
Summer spray apply during crawler stage (about May 10) Nicotine sulfate 1 tsp./1 gal. water plus soap, or 2 tsp. D.D.T. 50% wettable powder/1 gal. water.

SPRUCE GALL APHID

Plant attacked: Spruce and Douglas fir.

Type of insect and injury: Aphid-type insects, cause galls to form on tips of spruce branches. Gall, green fringed with purple in spring turning brown in summer. Appears as tiny tufts of cotton on Douglas firs. Causes

weakening of trees by sucking sap. Disfigures appearance of spruce.

Control: *Dormant spray* on Spruce-lime and sulphur 1/10.
Summer spray, Douglas fir nicotine sulfate 1 tsp./1 gal. water/1 tsp. soap.

LEAF MINERS

Plant attacked: Lilacs, poplars, elms, and alders.

Type of insect and injury: Adult small grey moth. Two generations per year. Larva-like worm 1/3" long. White or yellow in color. Larva mine beneath epidermis causing channels and blotch-like areas. Heavy infestation causes great loss in food production of trees.

Control: Preventive control, residual spray of D.D.T. in late May or early June before eggs hatch. Spraying with Lindane when mining starts may be effective. Second generation appears about Aug. 1st.

LEAF BEETLES

Plant attacked: Cottonwoods, elms and others.

Type of insect and injury: Several beetles or their larva feed on leaves. All are beetle-like, but vary in size and color. Partial or complete defoliation, depending on severity of attack.

Control: Spray when beetles appear, D.D.T. 50% wettable powder 2 tbsp./1 gal. water, or lead arsenate 1 oz./1 gal. water.

CATERPILLARS

Plant attacked: Most trees, and some shrubs.

Type of insect and injury: Caterpillars are actually the larva of various moths. Usually they are worm-like varying in color and size. Most of them are heavy foliage feeders. A heavy infestation usually causes complete defoliation of tree.

Control: D.D.T. 2% spray when larva are small preferably, or lead arsenate. Removing egg masses on small twigs in fall and burning them also helps.

BOX ELDER BUG

Plant attacked: Box elder.

Type of insect and injury: A flat narrow bug ½" long. Black with 3 red stripes on back, and red veins on wings. Causes weakening of tree by sucking sap. Mainly a nuisance in fall when they congregate on buildings, in warm places, often getting into houses.

Control: Removal of Box Elder if possible. Strong solution of soap, such as Dreft 1 oz./5 gal. water, or 45% Chlordane emulsion 2 tbsp./2 gal. water.

PINE TIP MOTH

Plant attacked: Most species of pine.

Type of insect and injury: Adult is a small moth causing little damage itself, but it lays eggs on the tips of pine branches, and when these hatch the larva are worm-like, ½" long, and yellow. They cause distortion of pine by destroying the growing tips.

Control: Picking infected tips before larva emerge helps prevent reinfestation. Spray with lead arsenate just as needles unfold from candle and

then a week or 10 days later. Also a 1% solution of D.D.T. applied in same manner is effective.

PEAR SLUG OR CHERRY SLUG

Plant attacked: Cherry, plum, pear, cotoneaster, and hawthorne.

Type of insect and injury: Adult is a sawfly, yellow and black in color, slightly larger than the common house fly. Larva are slug-like, dark green to orange, covered with slime. The larva skeletonize the leaves eating the fleshy portion of the leaf, leaving the midrib and veins. Heavy infestations cause complete defoliation.

Control: 50% wettable D.D.T. 2 tbsp./1 gal. water, or lead arsenate 1 tbsp./1 gal. water, or Chlordane, or Toxaphene, or Black Leaf 40. Spray when larva are small (1 generation in July, 1 generation in August).

FLAT HEAD BORERS

Plant attacked: Apples, birch, poplar and others.

Type of insect and injury: Adult borers are usually a shiny metallic color, boat shaped, 1/3″ to 1″ long with roughened wing coverings. The larva is a large white grub with a flat enlargement back of the head, usually found in shallow galleries beneath the bark. The larva mines just beneath the bark, in heavy infestation, will girdle the tree.

Control: Wrapping the trunks of small trees in nursery, specially in late spring prevents adult attack. Older trees are best protected by keeping them in vigorous condition. 2% oil emulsion spray of D.D.T. applied at time of egg laying is effective in controlling these insects.

ROUND HEAD BORERS

Plant attacked: Locust, poplar, ash and others.

Type of insect and injury: Adult usually a round or straight-sided beetle, hardshelled, antennae as long or longer than body, often banded with brilliant contrasting colors. Larva found in galleries is large, white grub and has an enlargement behind head. Larva cause large mines beneath bark and into heart wood, often girdling tree.

Control: Same as for flathead borers. Carbon disulfide injected into galleries can be effective in minor infestation. (Use with caution)

BARK BEETLES

Plant attacked: Elms and others.

Type of insect and injury: Usually a short, stout beetle 1/25″ to ¼″ long, with hard roughened covering. Larva small white grub 1/25″ to ¼″ long. Adult lays eggs in galleries under bark. When larva hatch they mine in various directions from gallery. Some of these beetles make a very definite pattern, either horizontally or vertically just under bark. Others make a very eratic pattern. These beetles cause death of trees by girdling and are also the carriers of a number of diseases such as the Dutch Elm disease.

Control: Sanitation, that is cutting, burning or treating infested trees or logs. Maintain health and vigor of trees by fertilization and trimming, as beetles usually attack weakened trees. Special sprays, usually containing D.D.T., are available for the control of these beetles on elms, spruce, and others. When applied as recommended these sprays have been very effective.



Now eat your greens, dear. They're so good for you."

THE APHID (Plant Louse)

MORAS L. SHUBERT

A troublesome pest is the aphid (plant louse),
Destructive, perhaps, as the rat or the mouse,
Sucks juice from our plants in the garden or house,
And in every clime.

We spray them, we smash them, we can't help but hate
These she's that are mothers without help of a mate.
For the aphids have sex lives most weird, I must state
In this rhyme.

In spring all are females, and each soon a mother,
And each generation will then give another.
They work on our plants which they quickly do smother
In record time.

All summer we see how this cycle it goes
On pansies and snowballs, sweet peas, or bush rose,
Till end of the season and ere they get froze,
Get in winter prime.

As day length gets shorter, this bug never fails
Begetting half shes and the other half males.
Now you know the ending to any such tales,
And it's not a crime.

EPILOGUE

And when you do find them, before you turn gray,
Put nicotine sulfate or lindane in spray
Have malathion and others to help in the fray.
If you really want to win
Destroy them through their skin.
Soon you'll win the battle and give thanks when you pray.


?
Ho - Hum,
This is
the Life...



BEES, BUGS AND BEETLES

By VIRGINIA SENA

YOU'LL agree, I think, that it's a good thing that people are bigger than bugs since there are so many many more of them than there are people. Millions of insects, spiders, and bugs live all around us in water, air, soil, and plants. In fact, it would require the printing of an eight page newspaper for eight weeks to print all the names of the known insects of the world—even without descriptions or pictures!

Some of these bugs and insects are friendly helpers to us while others are tiny enemies. One of these little enemies has a curious habit. Perhaps you have noticed scrawly patterns lined on nasturtium leaves, almost as if someone had used a pen filled with green ink. These are travel maps made by the mining fly's baby, or larva as it is called. Not only is this larva clever enough to draw maps, but it can fill a plant's leaves so thoroughly with these lines that the leaves simply curl up and drop off leaving a dying plant. The adult mining fly lays her eggs between the upper and lower layers of a leaf and when the egg hatches, the larva eats its way between these layers making the map that we see on the outside of the leaves.

Another unruly bug is the flea, a lazy parasite to which the name "bug" truly belongs. Flea carries disease from animals to people and for this unwelcome service, he is banished from our list of friends. Flea is not all bad, however, since sometimes a circus operator can train him to perform! Do you know how this is done? Well, the circus man puts Flea into a glass jar with a glass cover. Each time Flea flits to the top—Bang! Ouch!—he hits the lid and drops to the bottom of the jar with a flea-sized thud. After trying this for a day or two he decides to give up this jarring activity and settles down to walking around in a daze. Then the circus man puts a thin wire collar and hair-like leash on Flea and makes him juggle little balls or turn a ridiculously tiny merry-go-round.

Next is an insect that has an ugly name along with exceedingly unpopular habits and yet still remains interesting. This is the blister beetle so called because in the old days people used his powerful blistering abilities in much the same way some of us still use mustard plasters today.* It is difficult to rid ourselves of the B. B. (blister beetle) since he rather stubbornly resists most insect sprays used to make him cough, sneeze, and roll over dead. He might even hop back on our arm to see how *we* like a dose of *his* medicine! How lazy this fellow is! The blister beetle's life begins when mother B. B. lays her eggs near a mason bee's nest. When the B. B. larva hatches, it climbs nearby flowers, not to look at them, but to hitch a ride on a furry leg of this honey-seeking bee. When the bee flies to her nest, the B. B. baby drops off his plane onto one of the bee's freshly laid eggs which look somewhat like boats and float around on blobs of honey. This honey the bee has stored

for her own young to eat who are still in these eggs. Thinking he is a sailor, the B. B. baby rides around on the egg and then turns pirate by sucking the contents of the egg until only the paper shell remains.

After living a life of ease in this manner for awhile, the B. B. baby changes into a boat-shaped "pupa" himself with air holes conveniently placed like portholes above the level of the honey lake. Here he floats and eats the honey until it is all gone and he has become a fat worm, high and dry on the mud floor of the nest. Now Mother Nature again changes him—this time giving him a shiny armor called "chitin" and out he walks into the world as a full grown blister beetle who will start a new generation that will go through this same odd growing up process all over again.

By the way, the mason bee, who was B. B.'s unknowing and very badly treated host, is one of our friends. In her search for the yellow dust called pollen which she finds in the center of flowers and gathers on her legs to take home to be made into honey, she also accidentally leaves a little pollen from other flowers she has visited wherever she stops, and this pollen from the other flowers helps new ones to bloom and bear fruit.

The mason bee's cousin, the common honey bee, also carries pollen on her legs but she makes her home in a hive. Since her house is not equipped with a furnace or fireplace, keeping warm throughout the cold winter is a problem she must solve or freeze to death. Being an active sort, the honey bee joins with all her many sisters, cousins, and aunts in the hive, to form a tight cluster or ball and all of them do one long shuffle dance, huddling together and stamping about so that the body heat from all this activity keeps them warm just as we stamp our feet and jump around to keep warm on a cold day. The outside edge is colder than the middle of the cluster so the outside bees gradually rotate into the inner warmer part of the group so that all have a chance to keep warm. Their dance raises the temperature inside their house as much as sixty-five degrees over that of the cold air outside. If you like, you can read more about the industrious honey bee in "The True Book of Honey Bees" by John Lewellen. This book is kept in the public library for you.

It is fun to read about the queer ways of the insects and to look for them by the signs they leave in gardens and on trees. To find out more about this interesting world of life buzzing, gnawing, and hopping all around us you will want to look at and read the following books:

"Little Lives," by Julie Closson Kenly

"The Real Book About Bugs, Insects, and Such," by Jame Sherman

"Insects and the Homes They Build," by Dorothy Sterling.

**Blister beetles were ground up to use as a mustard plaster for this beetle secretes an acid that produces a burning sensation when applied to the skin.*


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WHERE OUR FRUITS AND VEGETABLES CAME FROM

By L. J. HOLLAND

PART 2

FOR this second article I would like to talk about some members of the Nightshade Family. I know that the word "Nightshade" will cause some to think of the plant from which the drug Belladonna is extracted. Others may associate the term, and rightly so, with such garden pests as ground cherry and buffalo-burr, but this family has given us some of our more beautiful flowers and many of our better known vegetables such as potatoes, tomatoes, eggplants, and peppers. Tobacco, while outside the realm of these articles, is an important and universally known member of this family.

It has been said that with the sole exception of rice, potatoes are used as food by more peoples than any other plant. That such a prime favorite was unknown to more than a mere handful of people before the discovery of the New World is almost unbelievable, but such is the case. It is odd also that we still cannot place our finger on the exact spot of its origin, although there is a wild potato growing in the Andean region of Chile that we believe to be the ancestor of our modern varieties. Recent excavation of prehistoric ruins tend to show that the potato antedated the Inca civilization by probably several centuries, but these bore little resemblance to our McClures and Russets. In fact, it was not until Luther Burbank took a hand that the potato began to look as it does today.

We are reasonably sure that the Spanish Conquistadors took the potato north and introduced it into Central America and Mexico and maybe as far as our southwestern states. I wish I were just as sure when and by whom it was introduced into Europe. Sir Francis Drake, Sir John Hawkins, and Sir Walter Raleigh have all claimed the honor, and the dates vary from 1565 to 1586; you may pick your favorite man and year. It was about this latter date, however, that the potato was introduced into Ireland where it soon became the most important food crop. In fact, it was so important a food among the poorer peoples of Ireland that a famine in 1846-1847 created by an almost complete crop failure due to blight, caused hundreds to die of starvation, and was the prime reason for the first mass immigration of the Irish to the United States.

It will probably come as a surprise to many readers to learn that the potato is actually a perennial in its native state, and something that may be more surprising is that *Solanum jamesi,* with tubers about an inch in diameter, is indigenous to the southern part of Colorado—from Walsenburg westward. The tubers of this variety are not considered edible and there is no record of the Indians ever having used them.

By word association, it is only a step from potato to sweet potato, but from a botanical viewpoint it is quite a step, indeed. The sweet potato, *Ipomea batatas,* is the only member of the morning-glory family that we use as food.

The sweet potato was about the first vegetable that made its way from the New World to Europe, having

been introduced to southern Spain six years after the discovery of America. Magellan purportedly carried it to the islands of the South Pacific, where it soon became an important food product, partly because of its ease of culture in the warm, humid atmosphere of that region. Up to about a hundred years ago many botanists believed it was really indigenous to Indonesia, but later research has suggested that it might be from the Yucatan Peninsula of Mexico.

In this country the term "Yam" is erroneously applied to the sweet potato. The true yam is *Dioscorea alata,* from India, Burma, and adjacent islands and is used as food in those regions. The tuber of the yam reaches a length of six feet or more and sometimes weighs up to one hundred pounds. The cinnamon-vine is its best known relative. The yam is allied to the lily.

NURSERY STOCK SOLD IN CANS

"Canned or container-grown nursery stock, which has been tested in the Midwest and East for several years is now found at numerous nurseries throughout the country, according to reports by the American Association of Nurserymen. Growing of plants in containers originated in California and gradually has spread to most parts of the country.

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Controlled quality. Quality of plants can be controlled better when grown in containers, it is said.

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FLOWERING TREES IN THE BOTANICAL GARDENS

By ROBERT WOERNER, *Director*

ONE of the most important economic and ornamental sections of the rose family, the genus Prunus, was given its first representation in the Botanical Garden through the gift of over 100 plants from the Men's Garden Clubs of Colorado. Plums, peaches, flowering almonds, chokecherries, sweet cherries, and sour cherries were purchased and planted by the group. The collection is just west and south of the rose garden in City Park, where it can be seen from the vantage point of the Museum of Natural History or from the park drive along the lake to the west.

The genus Prunus numbers over 150 species and many natural and horticultural varieties scattered throughout the world, mostly in the temperate zone. Many of these plants are cultivated for their edible fruits, while a larger number are highly ornamental garden subjects because of their showy flowers appearing before or with the leaves. The cherries are one of the most familiar groups of the genus, being widespread in their culture. The sour cherries are the least particular as to soil and moisture requirements and have high resistance to disease. Some of the cherries are hardy in the coldest zones in which plants are cultivated, greatly adding to the usefulness and importance of this group of flowering trees.

The cherries are represented in the Botanical Garden plantings by Mazzard or Sweet Cherry, Sour Cherry, Sand Cherry, and Chokecherry.

The sweet cherry varieties Yellow Glass, Bing, and Windsor (horticultural varieties of *Prunus avium,* Mazzard Cherry) were planted on an experimental basis. The fruits of the sweet cherries are large and commercially important, but the trees lack the toughness and adaptability of the sour cherries. Large scale commercial production of sweet cherries is limited to a few areas in the country where climatic conditions are most suitable.

The commercial sour cherries are varieties of *Prunus cerasus,* a small tree native to western Asia and southeast Europe. The species is represented in the gardens by the popular varieties Morello and Montmorency. Although sour cherries are grown primarily for fruit, they are useful for ornamental purposes because of their hardiness which has been mentioned above. It should also be noted that the sour cherry and its varieties are suitable for planting in shady locations unlike most fruit trees which like full sun.

The Western Sand Cherry, *Prunus besseyi,* is also valued for its sweet fruit. Selected seedlings have produced plants bearing very heavily. This shrubby cherry is a hardy native from Colorado and Kansas north to Manitoba. It has a small single white flower.

The Purpleleaf Sand Cherry, *Prunus cistena,* is another hardy type. This hybrid was originated by Dr. Hansen at the South Dakota experiment station as an ornamental with good fruits. It is also valued for its purple foliage and its relatively small size (7 feet) which makes it so useful in landscaping small properties.

Another shrubby cherry that is native to the Rocky Mountain region is the Black Common Chokecherry, *Prunus virginiana melanocarpa.* This natural variety has been planted



Western Chokecherry

at the Botanical Garden in a thicket similar to its characteristic growth in nature. The racemes of the flowers of the species are a familiar sight throughout the whole of the North American continent from the Arctic Circle to the mountains of Mexico.

Almost as widespread in its range is the American Plum, *Prunus americana*. This common wild plum has been the source of many cultivated garden plums for the northern areas. It is a good ornamental as well, producing small clusters of white flowers about one inch in diameter.

Prunus persica, the common peach grown in many horticultural varieties for its fruit, is the only peach planted in the collection at the present time. The peaches seldom make good specimen trees, and they require heavy pruning to induce profuse flowering. They might well be maintained as a shrub in a less conspicuous area in the garden.

The Flowering Almond, *Prunus triloba,* is a familiar ornamental shrub, particularly in the double flowering form. Its pink blossoms appear early in spring before the leaves unfold.

The Newport Plum, *Prunus blireiana Newport* is a double flowering tree producing pink blossoms in May. It is one of several clons of the Blireiana plum which is prized for its purple foliage and long lasting flowers. The color of the foliage is better when the tree is planted in full sun.

The Pissard Plum, *Prunus cerasifera atropupurea* (Pissardi) is similar in foliage color to the Newport Plum, but lacks the double flower. It is a more vigorous grower than the Newport Plum, but like the Newport, it requires a heavy pruning or cutting back occasionally to retain the good foliage color which is best on new growth.

The Men's Garden Clubs, through this gift of the thirteen types mentioned above, have begun a collection of flowering and fruit bearing trees which will assume much greater importance as additional Prunus species and varieties are added. With the continued support of this group, the Botanical Gardens Foundation will be able to bring in many new plants, particularly in the plum and cherry sections of the genus. These plants will be tested for hardiness and performance under the conditions of soil, temperature, and humidity which exist in the Denver area, with the promise that many will find a welcome place in the ornamental horticulture of the Rocky Mountains. With the passing of the next few years the Prunus collection will become an ornamental and educational display that will be an important part of the botanical gardens in City Park.



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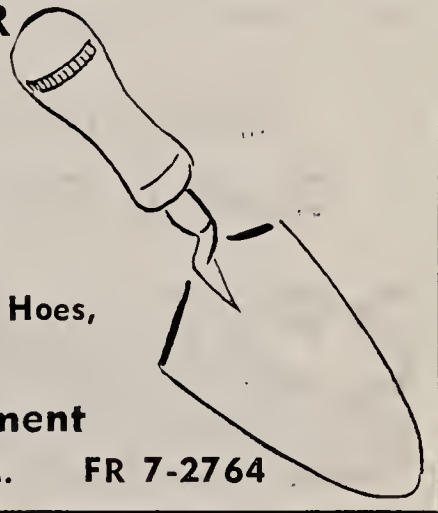
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Vol. 13 JULY, 1956 No. 6

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Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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CALENDAR OF EVENTS

July 9—Botany Club meets the second Monday of each month, 8:00 p.m. Horticulture House.

July 11—Organic Garden Club meets the second Wednesday of each month. 8:00 p. m. Horticulture House.

July 14 — Northern District Junior workshop meets the second Saturday of each month. 10:00 a.m. Boulder, Colo.

July 18 — Look and Learn Garden Tour.

Green Thumb Program. 9:00 a.m., KLZ, each Saturday. Pat Gallavan, Horticulturist, with Bill Jones.

During the month of July, an exhibit of photographs of wild life and scenery by Charles Ott, will be on display in the museum Gallery, third floor, Phipps. The exhibit was loaned to the Museum by the state university of New York.

Aug. 6—"Fun With Flowers," first Monday of each month. Garden Center, W. Alameda Avenue and Kalamath St. 10:00 a.m.

August 8—Look and Learn Garden Tour, 10 a.m. to 5 p.m. This tour will feature a number of lovely homes in Southeast Denver and Cherry Hills. Plan now to attend.

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION
A non-profit, privately financed Association.
1355 Bannock Street • Denver 4, Colorado • TAbor 5-3410

QUIEN SABE?

YES, who knows what each member receives from an association such as ours. Is value received when a special problem concerning your garden is answered in The Green Thumb or by a call or a visit to Horticulture House? Do the messages we pass on regarding conservation help you, and in turn do you do your part in keeping Colorado beautiful? Has the actual establishment of a Botanical Garden advancing horticulture in the Rocky Mountains helped? Are the efforts of many of the members concerning roadside beautification and state parks paying off? Have the educational activities, such as the spring work shop and the garden tours, promoted action in beautifying towns and cities? These and other questions are often asked but seldom answered because the answers lie with you, the members of such an organization.

The job cut out for a non-profit, educational association such as ours is great here in this rapidly expanding state. We have only scratched the surface of a few of the thousands of new gardens that have been planted in Colorado in recent years. What will we do with the thousands that appear in the future as our cities continue to stretch their seams? What will we do about the recreational and conservation problems that arise as our population expands and leisure hours increase?

One thing for sure, only a dynamic and an active membership can meet and surmount these problems as they arise. Are you doing your part to make our organization go? Many committees are in need of active workers. New ideas for the magazine and for new activities for the association are always in demand. If you have time and want to become active on one of the committees, call TA 5-3410 and let us know or if you have ideas that will help jot them down when they come to mind and send them in to Horticulture House, 1355 Bannock.

IMPRESSIONS AND OBSERVATIONS

By FRED R. JOHNSON

HERE are some impressions and observations of the first Look and Learn garden tour on May 29. Some outstanding gardens were visited including the beautiful display of iris which Dr. Durrance has developed until it is probably the largest private collection of varieties of iris in Colorado. How flower lovers reveled in this gorgeous display of blossoms, which come nearer to orchids than any flower we have in these parts. The visitors plied Dr. Durance with questions, and he graciously took of his time to help the experts assigned to this garden to answer the numerous questions on the culture of iris.

Mrs. Waring's garden makes the most of a small space with just the proper selection and design of plants and trees to blend in with the architecture of a beautiful home. Every element was in perfect order.

At the Everett Cline garden visitors were greeted with more splendid iris and colorful Japanese poppies although Everett had insisted a few days before the tour that his garden would not make a good showing.

Mrs. Howard Housley is another

iris enthusiast who has made the most of a small garden. She has done considerable cross breeding herself and demonstrated to visitors methods used by iris growers.

Then our faithful Martin Keul, who goes in more for vegetables and fruit, demonstrated cultural and fertilization practices, and protection methods against hail. Although Martin apologized for this and that, his garden was so highly polished that there was not a blade of grass awry!

Several of the hosts remarked that the visitors, with their note books and questions, were really interested in gardening. And that is the difference, I maintain, between "Look and Learn" garden tours and other tours. It is the key note that we must emphasize. We should tell the thousands of new home owners in the Denver metropolitan area to take advantage of the opportunity to see what can be accomplished with various types of soil, slope, and cultural problems, demonstrated in the gardens included in these tours.

New home owners can learn more of practical gardening on these tours with experts available to tell how to do it than by any other system of study. The cost is negligible in comparison with the value received.

A final thought — some of you good people buy tickets to help the Association and do not use them. Why not give these tickets to your young gardener friends, especially those living in the new housing developments. They need the help that the tours provide.

JULY LOOK AND LEARN VISITS

FEELING that one picture is worth a thousand words, the Colorado Forestry and Horticulture Association offers you, through its Third Look and Learn Tour of the season, the opportunity of seeing eight lovely gardens in the delightfully modern Crestmoor area. These gardens were carefully selected by the committee members who vouch for the originality of shrub borders, flower beds, patios, fences and other nice features found in these gardens.

The following gardens will be open between 10 a.m. and 5 p.m., Wednesday, July 18:

Mr. and Mrs. Lester Thomas, 19 Crestmoor Drive

Mr. and Mrs. M. G. Brennan, 18 Crestmoor Drive

Mr. and Mrs. C. L. Hubner, 311 Jasmine

Mr. and Mrs. T. E. Best, 345 Jasmine

Mr. and Mrs. F. W. Herres, 317 Jasmine

Mr. and Mrs. Alfred J. Bromfield, 330 Jasmine

Mr. and Mrs. Arthur E. Holch, 140 Krameria

Mr. and Mrs. Harvey A. Nathan, 101 Jersey

Tickets for this tour and the last one on August 8 are available at Horticulture House and at any of the gardens on the tours.

The gardens are confined to the Crestmoor area making it convenient for you to see all the gardens in a short period of time. As usual, an expert will be present in each garden to answer any question you might have.

Make the most of this opportunity by inviting a friend to accompany you on the tour. It's a very pleasant way to introduce anyone to our organization and its educational activities.

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ARRANGEMENT OF THE MONTH

By MR. AND MRS. RAY TURNURE

DAINTY pink coralbells (*Heuchera sanguinea*) are gracefully combined with pink and yellow blended Talisman roses in three stages of perfect bloom—full, half, and bud. The vase is icy crystal creating a feeling of airy coolness in this charming arrangement for hot summer days.



HOW TO PLAN YOUR UNDERGROUND SPRINKLER SYSTEM

By E. L. COCKRELL

HERE is how Colorado home owners can plan a modern, inexpensive watering system for a more beautiful lawn without wasted water. It is an underground sprinkler system of polyethylene plastic parts that you can install yourself over a week-end.

An underground sprinkler system is made of sprinkler heads set level with the ground, and connected by underground piping. The heads are permanently placed to water your whole lawn, thoroughly and evenly. And, by using polyethylene plastic pipe and fittings available at any hardware store, you can install a complete system for about three cents per square foot of yard.

The first step in planning your system is to make a scale drawing of your property on graph paper, as shown in Fig. 1. Be sure you show all boundaries, buildings, drives, and trees or shrubbery.

When you have done this, you are ready to locate your sprinkler heads. Three types are used spraying a ¼-circle, a ½-circle, and a full-circle pattern. These heads spray water in 5 to 13 feet radii, depending on the setting of a screw adjustment. But, in planning the location of the heads on your drawing, assume all heads spray 13 feet.

To locate these heads, begin by drawing a ¼-circle pattern to scale in one corner of your yard. Next, draw a ½-circle pattern along the edge of the yard and centered 15 feet

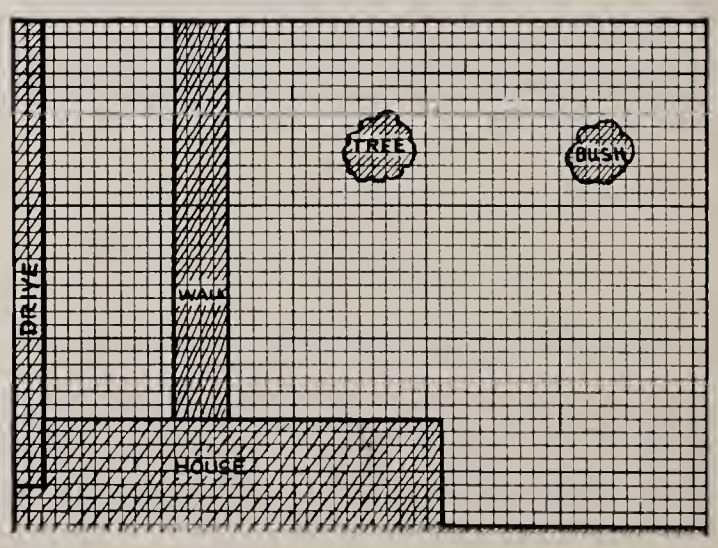


Figure 1

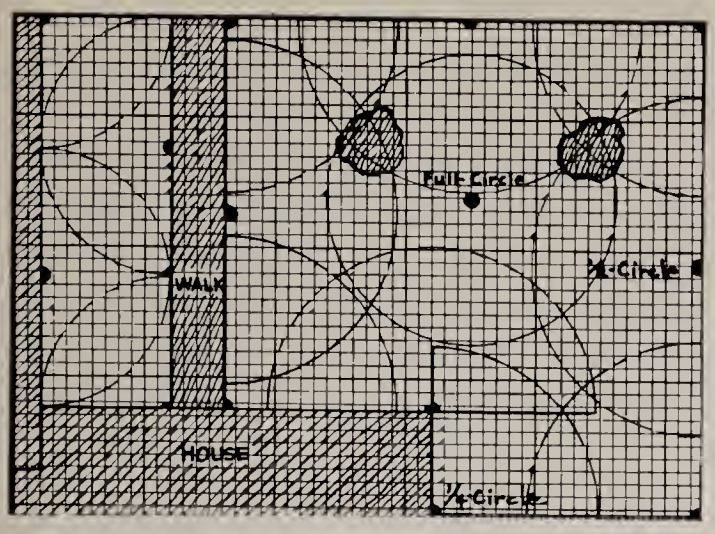


Figure 2

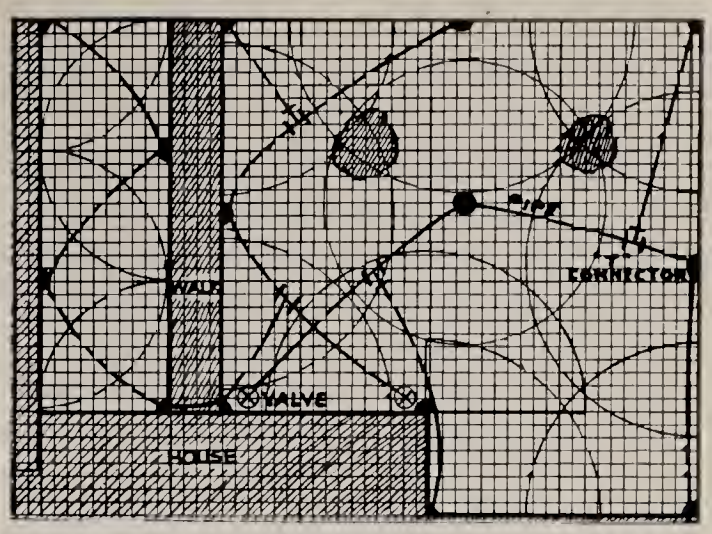


Figure 3

from the corner. Continue locating ½-circle heads along the edge until you have located sprinklers all the way around your yard at 15 feet intervals or less. Most corners will require ¼-circle heads.

Where you have extreme overlapping caused by heads located less than 15 feet apart, reduce the spray radius as necessary to get a one-third overlap. Never set the heads so far apart that you have less than one-third overlap, or your lawn will not have proper coverage.

After locating the ½-circle heads, you will probably have to fill in the center of your yard with full-circle heads. Drew these full-circle patterns so they are centered 15 feet from adjoining heads, so that your yard is covered as shown in Fig. 2.

With all your sprinkler units located, the next step is to find out how much water you will need. Using the following table, assign a water requirement to each head. Then add them together to find the total amount of water needed.

Size Sprinkler Head	Gallons Per Min. Needed For 13′ Radius	10′ Radius	5′ Radius
¼	1.4	.88	.55
½	1.8	1.1	.7
Full	2.8	1.75	1.1

Since few homes have enough water to operate an entire system properly at one time, it will probably be necessary to have several pipe lines or branches operating independently. Two steps are needed in determining how many branches you need.

First, find out how much water you have available. For this purpose, borrow a water flow gauge from your hardware dealer. This gauge will measure both your water pressure and quantity. In most houses the water available can be greatly increased by installing a ¾ or 1 inch pipe from the service line to the watering system's controls. Also, more water will flow into your system if your plumbing has gate valves.

Second, when you have determined the amount of water available, divide it into the amount of water required by your system. This will tell you how many branches you need.

Next, locate a convenient place for your system's control valves—one for each branch. Place them so you won't get wet when you turn them on—behind a ½-circle head, for instance.

Now you are ready to draw in the pipe lines connecting your sprinkler heads into the necessary branches. Beginning at a control valve, draw a line through as many heads as you can until their water requirements equal the amount of water you have

available. Continue this procedure until all branches are drawn on your plan, as shown in Fig. 3.

Those are the essentials in planning your underground sprinkler system. And here are some additional points that should be given consideration.

When separate branches are installed to cover gardens or flower beds, locate the pipes so they can not be cut by spades or cultivating tools.

Trees and shrubs in the lawn may block the spray from a head placed near it. For this reason, always try to locate your heads so that trees and shrubs stand in an overlap area.

Finally, if your yard contains many irregular areas, terraces or garden areas, it might pay to consult an underground sprinkler system engineer for help in designing your system. This engineering service is available through your hardware dealer for about $15. And, a licensed plumber should of course be consulted for all plumbing changes and additions.

From Thomas Jefferson's Garden Book,
Annotated by Edwin Morris Betts
Monticello

I remember you told me when we parted, you would come to see me at Monticello, and tho' I believe this to be impossible, I have been planning what I would shew you: a flower here, a tree there; yonder a grove, near it a fountain; on this side a hill, on that a river. Indeed madam, I know nothing so charming as our country. The learned say it is a new creation; and I believe them; not for their reasons, but because it is made on an improved plan. Europe is a first idea, a crude production, before the maker knew his trade, or had made up his mind as to what he wanted. *Jefferson to Mrs. Angelica Church, Paris, Feb. 17, 1788.*

Gardening

I have often thought that if heaven had given me choice of my position and calling, it should have been on a rich spot of earth, well watered, and near a good market for the productions of the garden. No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden. Such a variety of subjects, some one always coming to perfection, the failure of one thing repaired by the success of another, and instead of one harvest a continued one through the year. Under a total want of demand except for our family table, I am still devoted to the garden. But though an old man, I am but a young gardener. *Jefferson to Charles Willson Peale, Poplar Forest, Aug. 20, 1811.*

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"HOW I DID IT"

By PERSIS M. OWEN

TO EXPLAIN "how I did it," or more explicitly how I made my garden, I think one must begin, not with the word "how," but with the word "what" for *what* I did was much more important to the finished garden than *how* I did it.

First to be considered was what was necessary for convenience and utility. In my case it was a drive and parking space. I decided to use an old road already on the place as far as it went, and give it a slight curve to bring it to the desired termination in the parking space close to the house. But then what kind of a parking space? First, I made up my mind that three or four cars must be able to park in it without making it necessary for any one of them to be moved for the others to get in or out. Also, I wanted to be able to back out of my carport, which was on the north side of the planned parking space, and with one swing, head out to the road. Inquiry brought the information that this would require a space about fifty by sixty feet. That meant a large, barren gravel space close to the house. What to do to soften it. The solution I arrived at was to have a garden between the parking space and the house, and to open a wide path from the parking space through the garden to the front door. This plan meant that when it rained or snowed, one had to take a bit of weather before reaching the house, but I preferred that to a fifty by sixty gravel space smack against my front door.

Now that I had decided what I needed in the way of a road and parking space, how to accomplish it was not too difficult. I could either have it done by experienced road men, if I could dig up the wherewithall, or find out from them how to do it and blunder my way through with less expensive, less experienced help. I chose the latter alternative and blundered my way through. This decision had two good results. The road and parking space cost me less than it otherwise would, and through several years of effort I learned quite a lot about gravel and road making. The road-bed isn't perfect, the main reason being I think, that I didn't believe I had to do all the things I was told were necessary; but it is fairly satisfactory, and I am a bit wiser, at least, about road making.

The approach to the house was settled. Now came the garden proper. The house is small and simple and good taste indicated the garden should be likewise. But I didn't want a small, simple garden. At the time, with twenty acres to play with, and a good helper on the place, that seemed too uninteresting and confining. Poor, poor, silly me! And so I worked out a complicated plan that would give me a rather large garden that would appear simple and appropriate for the little house. I used the device of having several rather small, simple gardens surrounding the house, each one connected with the next but separated from it, either by walls, fence or shrubbery. This worked out as a lawn and shrubbery garden to the south of the house, entered close to the front door by the path from the parking area. Opposite this entrance from the path, to the north, was the entrance to a perennial garden. Back of it is a rose garden, or was, for this garden

has changed its character. The rose garden opened to the west to rather a large paved patio with access from the living room and a window passage for serving from the kitchen. From the west side of the patio a short path leads south, around the kitchen wing of the house, to a small gravel-paved garden into which the kitchen opens. It is shaded by a large tree in its center and is nice for breakfast or such. This little garden in turn joins the lawn and shrubbery garden south of the house, separated from it only by a low clipped hedge. So we have circumscribed the house and are back where we started. From the rose garden and from the patio to the north a flight of stone steps lead up to a small woods made of evergreens, white birch, and flowering crabs. It has natural, meandering paths and woodsy undergrowth. This makes a wind-break and background for the house, garden and parking space, as it extends along the entire north border of all of that area. This plan, I believe, looks very simple and in keeping with the small white shingled house, yet when seen on paper, it is quite a complicated plan and covers almost two acres.

The garden material has changed much over the years because of the trees. After twenty years, they are quite sizeable and cast their shade far and wide. The perennial garden is now a shade garden. The rose garden is more or less the perennial garden. The patio flower beds have become greenery which depend, for color, on potted flowers placed in the few remaining sunny spots. All the little green, sun loving plants that once bordered the paths in the woods while the trees were still saplings have long since disappeared, but the flowering crabs and plums and jonquils still make a brave show in the spring. Columbines sprinkle it with faint color in June, and in the fall it is all golden with birch and aspen leaves.

As I look back, I realize that my garden, for six or seven years, was flamboyant with color, but it and my house were hot and not too restful and most of the summer the little house stood with curtains drawn against the sun. Now, one can always find a cool, shady place to work or loaf in, and the windows stand open to the garden on all sides. One can't have one's own way entirely in a garden. Nature always has her say, and is more adamant than the most stubborn of mortals. It is wise not to break one's back and heart, to say nothing of one's pocketbook, by bucking her.

Back to the title of this article, now, "How I Did It." First I found out what I wanted in a garden. Then I set about finding out how best to get what I wanted, considering my pocketbook. Then, as the years passed, I let Nature have her way, and agreed wholeheartedly with her that some things grow in sun and some things grow in shade, and never the twain will meet.


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TRIAL AND ERROR

By REBECCA ENOS

THIS is not an article on how I made something out of nothing. This is the other side of the story. The mistakes I made and how I learned the hard way. Maybe someone may learn what not to do, from this.

We bought ten acres, mostly in alfalfa, a three room house, four young trees, and a shallow well with an old fashioned hand pump on it. There were several small buildings also, and they were where I made my first mistake. Being impatient to see everything just so, neat and orderly, I gave the little buildings away. I wanted things to happen fast, and they did. And was I sorry for that. Time and again I wished I had them back.

But people just fresh from the city have their own ideas about everything. They consider country people just a little slower than they are, and jump right in with a lot of vim and vigor and theories they have got from books and articles they have read.

I started out to make a regular park out of our new place. We got trees from the state and had them planted in rows by a student from the agricultural college. He knew his business, and that much was alright. It was a good start, but we knew too little about where they should be planted, or how they should be planted. They were dry land trees, and we put them along the irrigation ditches which was a mistake for they grew too fast, and the heavy winds in the winter broke the limbs off when they got to be large trees. They stand now as fine examples of our ignorance.

Among the trees we got were small junipers about eight inches high. Those I used as border plants around flower beds. You can imagine what happened there. One by one they had to be taken out. The roots by that time were well down in the ground so they were hard to transplant and we lost most of them.

Another outstanding mistake of mine was my ambition to have a large garden, giving too little thought to the preparation of the soil, and too much time to acquiring more plants than I could possibly take care of. I did find out, however, that the soil which had had alfalfa in it was well fertilized. This I was told by one of the country folk whose judgment I learned to respect. These country people knew ways of conserving water and they showed me how to transplant flowers and then pull a few weeds and leaves around them to keep the soil moist; how to judge if the soil was moist by squeezing it to see if it would hold together, which meant it was good for another day or so. I learned to leave a large tub of the ice-cold well water in the sun to warm it up before watering the young plants, and how to root new plants from the old ones by laying down a section of the mother plant, putting dirt over it, and cutting it away after it had formed roots.

Gardeners now are familiar with all of these things, but I wasn't, and I have often thought since then that the country people must have laughed at my ignorance and my over-confidence.

I believe an outstanding mistake I made was in putting plants that could

stand to be dry in bed with the ones that had to have their feet wet most of the time. That one thing would have saved me a lot of work.

For several years, too, I tried for too big an effect, instead of fewer things in beds that had been prepared to last for a longer time.

However, along came the dawn. After working against odds which were discouraging for so long a time, I finally came to the conclusion that a few flowers, planted properly, were better than large numbers of them scattered over a lot of badly kept-up beds. So I dug deep down, prepared a well balanced mixture in the soil for just enough flowers for me to enjoy picking and tending to, and they actually looked as though they appreciated the change I had made for them.

I used to wait until disasters hit my garden before spraying, but I found it is smarter to anticipate some of the things that may happen and get at it. And that it is smart to read the directions on any spray you may use, even if you have used it before, as sprays do change and that extra spoonful may be just the wrong amount.

In conclusion, let me say, that gardening can be a pleasure or it can become a burden. I think I have found the way to enjoy it more than I did at first, and it may be because I have profited by my mistakes.

TREES

THERE is nothing in the horticultural library on trees to compare with the new book just off the press, *The Story of Trees* by Dr. Ferdinand Lane. It is full of information and reads like a novel.

It is all-inclusive with breakdowns of classifications, of historical eras, and of intricate physiological processes. The author projects, and very dramatically, the tale of trees through the contrast of their rivalry with the mountains in the constant struggle for survival against man, climate, insects, and lightning.

The publishers write, "Caesar crossed the Rubicon, but couldn't penetrate the Hercynian forest; Napoleon wept under a willow at St. Helena; Charles Second, fleeing from a disastrous rout of his army at Worcester, hid in an oak but lived to ascend the throne of England."

Always readable, often amusing, and always informative, this book gives a unique picture of the world through the history, life, and character of its woods as vivid and beautiful as a Corot painting and as scientifically exact. —HELEN FOWLER.



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THE AFRICAN VIOLET

By I. P. SCHOO and FRANCES EVANS

"God made the flowers to beautify
The earth and cheer man's careful mood
And he is happiest who hath power
To gather wisdom from a flower."

—William Wordsworth

I AM an African Violet. I am modest but I grow in all the countries of the universe. I have an alluring personality and am the most popular houseplant in the world.

Of course, I am not a violet at all. I belong to the same family as the velvet-leaved gloxinias. Originally I had a color and form similar to the violet and came from Africa, so they called me African Violet.

Sixty-six years ago, I was discovered in rich soil in the hilly regions of eastern tropical Africa by the son of Baron Walter von Saint Paul-Illaire. He sent me to his father in Germany, who gave my plants to a botanist, the director of a Botanical Garden. Our plants now were officially named Saintpaulia, after the man who discovered us. From the few wild plants there have now been developed thousands and thousands of varieties with different forms and colors of leaves and flowers.

I will bloom for you if you keep me in a warm place (daytime temperature between 70-80 degrees, night temperature between 55-70 degrees). I do not like direct, strong sunshine, but plenty of diluted light. It is good when you turn me part way around each week. I must have plenty of moisture in the air. An easy way to moisten the air round our plants is to use a double saucer, the bottom one filled with water and pebbles, on which the pots stand.

I also need fresh air, but in cold weather you must give it to me indirectly; I can't stand any draft. When the top soil gets dry, it is time to give me some water, the best time being in the morning. Use tepid, room-temperature water, that has been in a bottle or in the watering can for several hours. You can water from the top or from the bottom (best to alternate), but do it gently, do not splash or spill water on the leaves or crown. All the water that I did not absorb, pour out after 1 or 2 hours; I do not like to have wet feet all the time. Once or twice a month, feed me with liquefied plant food, commercial fertilizer, or compost "tea."[1] Never use the well-known plant fertilizers stronger than the directions say, preferably weaker.[2]

When my foliage gets dusty, I need a little bath. Give me a fine spray with a syringing nozzle, using water only slightly warmer than air temperature once or twice a month.

[1] For making compost, manure water ("tea," or "liquor") take 1 quart well-made compost or dried, shredded cattle manure to 1 gallon of water. Allow the compost or manure to steep for several days in a (non-metallic) container and stir daily, until the "tea" becomes dark in color. Dilute this stock solution before watering the plants. Put ½ to 1 cupful of liquid into a gallon jar or bucket of water and the organic plantfood is ready to use. Let the plants soak it up when the potting soil is still a little moist from previous watering.

[2] Often used are: Atlas and Ortho-Gro Emulsion containing fish material, Rapid-Gro, Heller-Gro, Hyponex, etc.

I also can get diseases. To prevent or cure them, ask the advice and help of some one with experience. Most experts advise regular spraying, about 2 or 3 times a month against insect pests, mites, and fungus diseases.[3] For children and beginners, probably the best advice is: if your plant does not have nice flowers, fresh crisp leaves, does not look healthy, destroy it and ask an African Violet friend for a new leaf or plantlet. Always take care that one plant does not touch another.

Gently take off faded flowers, spent flower stalks, dying old leaves, put them in a paper bag, and burn them.

After I have bloomed for you for weeks and months, I get a little tired. Then I need some peace and quiet to gather my resources again. During this resting time, when I am more or less dormant, do not feed me mineral plant food for several weeks, and avoid overwatering.

I am a prolific plant and will multiply many times if I am treated right. Take a healthy, mature, but not aging leaf that has a stem about an inch and a half long and put me in water in a little bottle, glass, or tumbler with a neck small enough to hold up my leaves. If the stems do not touch the bottom, there will be space for the growth of new roots. Leave me in the water until I root and tiny leaves of new plantlets, 1, 2, 3 or more are started, growing just below the water level. As the shock is great when the transfer is made from water to rooting medium or soil it is better to insert leaves in flats, flower pots, saucers, pans, etc., 1 inch deep, containing a moist rooting medium such as sand, peatmoss, Vermiculite (Teralite, Zonolite, Perlite), Sphagnummoss, or in a moist mixture, such as 1 part sand and 1 part peatmoss; 1 part peatmoss and 1 part Vermiculite; 1 part Zonolite and 1 part Vermiculite, etc. Each grower has his pet method. Find out yours!

When my little plants are about ¼ to ½ inch high, plant me in a 1½ to 2 inch pot filled with light, porous soil.[5] When I grow still larger, transplant me in stages in 2 to 4 inch azalea type pots. If the rim is unglazed, put an aluminum foil collar around the rim. Use pots that have been thoroughly washed inside and out — experts advise sterilization by boiling or baking.[6]

I also need good drainage. Put a piece of broken flowerpot over the drainage hole, then some coarse material—a layer of flower pot chips or a small pad of sphagnum moss.

The potting soil should be ¼ to ½ inch below the rim, according to size of pots, to allow room for watering. Never cover the crown with soil.

For all this I will show my thanks to you by giving you many lovely flowers and healthy beautiful leaves. You will find us fascinating in the change of flowers, leaves, colors, and

[3] Many use: Optox, NNOR, Antrol insect bomb, etc.

[4] For a light, porous soil mixture use: one part each of top soil (most experts advise sterilization of soil or mixture), not too fine sand, peatmoss, leafmold and vermiculite (Teralite, Zonolite, Perlite), and one-half part coarse, gritty charcoal (mixture sifted through a ½ inch sieve).

[5] For a heavier, porous soil mixture, add to the above 1 to 2 parts mature compost or rotted, dried and shredded cattle manure; bonemeal or Rainbow mineral, 1 tablespoonful to a 6 inch pot of soil mixture, or 2½ inch pot to a bushel basket of soil mixture. (Mixture sifted through a ½ inch sieve.) About half mineral, half organic, slightly acid (sour) soil (ph 6.5-6.9) is best.

[6] One method is to put the soil in the baking pan and cook it in an oven 180°-200° for 1 hour or put ½ inch of water in a sauce pan, bring it to a boil, fill pan with soil and simmer for 15 minutes.

shapes. It will give much pleasure for yourself and others to exchange leaves and little plants for your own collection or to help a friend to start one. But, be conscious of the danger that it is easy to raise more plants than you can really accommodate.[7]

[7]If you have made a good start and now need more information read: "All About African Violets," by Montague Free or "The Complete Book of African Violets," by Helen Van Pelt Wilson available at Horticulture House. In some of the licensed, professional shops where they grow and sell African Violets you can buy everything necessary for growing good African Violets.

MICRO GREENHOUSES

By L. W. DURRELL

IN MANY places in Colorado flat quartz pebbles lie in profusion on the ground intermixed with other kinds of small rocks. On overturning these stones the quartz ones are often found to have algae growing on the under surface, while other pebbles do not. This seems logical as the quartz pebbles, though not transparent, appear translucent, and in the micro climate below them there exists a miniature greenhouse—moist and light and of a fairly favorable temperature during much of the year. Such quartz chips have yielded several species of soil algae both of green and blue-green kinds.

Hundreds of samples of surface soil taken in this region have yielded to date 91 species of algae about equally distributed between blue-green and green algae, and it would be expected that any of these might occur under the pebbles. How much light and what kind of light passes through these quartz stones to the growing algae below? Is it enough for growth of these green organisms?

A metal shield was made having a hole in the center and over this hole the quartz rocks were sealed and their light transmission studied. When the shield and rock were placed over a Weston light meter in the bright noon sun a reading of 75 was registered, indicating rather good transmission of the quartz. The light passing the quartz was much diffused and could not be recorded on a spectrograph.

The shield and quartz, however, were placed over a camera negative holder and light from an H4 mercury vapor lamp was allowed to pass through to a negative. Spots the shape of the hole in the shield were recorded on the film. Also when this light was passed through the following filters, Wrattan A red, a Baird green filter, an infra-red filter, and a Corning ultraviolet filter 5860, photo records were made.

Like a miniature greenhouse the quartz pebbles keep the soil under them from drying out, and also permit the transmission of light adequate for growth of the minute green plant life below.

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The late Darwin M. Andrews with his collecting can and pick ax which were standard equipment for his mountain treks.

DARWIN M. ANDREWS, PIONEER IN HORTICULTURE

By MRS. MILDRED STEELE

DARWIN ANDREWS was born in the back woods country of Illinois of a father who was a plant collector and beekeeper, and of a resourceful mother who more than made the best of the isolation. Together they educated their children more thoroughly, perhaps, than would have been possible in a small country school. His mother was interested in botany, and as she learned, she also taught Darwin, who was her eldest child. During frequent tramps into the woods, and on the less frequent wagon trips, scarcely a plant missed their attention. Then were sown the seeds that bore abundant fruit in Darwin's future.

At 15, my father had his first formal schooling and shortly afterwards received college training in Wisconsin. There, he had opportunity to further his studies in botany aided by plentiful woodlands in which to explore. This schooling was largely financed by plant collecting so well learned from his father.

It was at college that he met Mary Wheeler. He found her an interested listener and companion on his many collecting trips for she was always ready at a moment's notice to share with him the beauty of a new plant or experience. Mary hadn't a chance to play "coy" after she had been chosen by this determined man. And so, they were married, but in Boulder, Colorado. The Wheelers had meanwhile moved there to make their home.

Seldom have two people faced a future with slimmer prospects. It was new country and there was little

chance for employment. Mother demanded nothing impossible and so was content with the devotion and glamour of life with this "un-understandable" husband. The simple necessities were provided in a number of small projects until plant collecting could command my father's full attention. The first lean years were spent in getting acquainted with new plant species of mountain and plain, but it wasn't too long before eastern horticulturists learned where they could get reliably named Colorado plants. Later these plants were shipped as far as England, Europe, China, and Japan, and many ended in the Arnold Arboretum.

This early collecting was done on foot, carrying heavy packs of plants by back. Besides plants for the market, there were those to be tested in the embryonic nursery. Seeds and cuttings were planted in abundance and were cared for between collecting trips. These were back-breaking days, and a man of less stamina could not have withstood such a strenuous program. As my father's experience grew, he realized the soil for different plants was all important. He worked out substitute conditions that might be possible for a gardener to use far from the mountain or plain habitat of the plants. This, no doubt, was a major reason for his great success.

A pack burro was the next step for more extensive trips. Father looked like the other prospectors, but instead of seeking gold-bearing ore, he was finding real treasure in plant material. Being an exceptional botanist, many plants previously unidentified were recognized as new species and were later registered in his name.

It was with a burro that my father first got into the High Country. I can imagine the reverence he must have felt when he saw the blossoming tundra spread out before him and the brilliant blue sky close enough to touch. It was nearby, on a collect-



D. M. Andrews and his burro. Through this mode of travel he discovered plant treasures more lasting than gold.

ing trip for erythronium bulbs, that my father and his brother-in-law ventured onto the "Great Snow Bank" as it was then known. When they came to the crevasses, they realized it must be a glacier for at the base of the ice there was a pool of water, milky with rock dust, proving their supposition correct. Later it was named Arapahoe Glacier.

A bicycle also served as a means of transportation. It was rigged with a luggage carrier, and trips to Denver, Golden, and even Colorado Springs were not infrequent. It was at this time that my father became acquainted with General Palmer of Colorado Springs. The General owned a large estate which he wanted to replant in native material. It was a sizable project, and it actually furnished the foundation for the Rockmount Nursery. From this project, a long and warm friendship grew between my father and the General.

With the establishing of a nursery, a catalogue became essential and subsequently the need for pictures in it required that my father become an expert in photography also. Even today, his flower pictures have seldom been equaled in black and white. What couldn't he have accomplished in color!

When the budget afforded a horse and light wagon, greater loads of plants were brought down tortuous mountain roads and over prairie country that could scarcely boast of a road. Long busy days, these, but happy ones.

As time went on, many horticulturists came to visit this man who was the chief source of Colorado plants. They came from many lands, frequently dining with us in our humble kitchen and if they were unexpected, our meager meal was extended with biscuits and honey. It was by such simple little tricks that my mother was always remembered as a gracious hostess.

Another milestone was the Model T Ford. Southern Wyoming, western Nebraska, New Mexico, northern Oklahoma, and the Colorado Western Slope country became familiar ground yielding precious new plants to this man of insatiable curiosity—it is said that it is this characteristic that makes pioneers. In my father's life the flame burned brighter with the years.

For a number of seasons after planting time was done, the Arnold Arboretum sent Father on botanical trips to southern Colorado, New Mexico, and northern Texas. This was priceless experience and the trips always produced a few more new plants for the nursery.

When more land was bought for growing nursery stock, most of the regular garden favorites were added to the expanding list of plants in the catalogue. A fertile mind always seeks new fields, and the need for improving certain varieties, suggested a program of plant breeding. Winters were spent studying the laws of heredity, the blossoming season in making crosses. Many of my father's peonies, phlox, and iris received the highest ratings. I am indebted to Mr. Roy Rogers, who was my father's close friend and associate for so many years, for having kept lists of the named varieties introduced into the market. A few follow:

PEONIES: Calypso, Crystola, Flamingo, Golden West, Hespanola, Majestic, Manitou, Montrose, Nimbus (best), Shavano, Silver Plume.

PHLOX: Cinderella, Loraine, King Lear, Colorado (best), Osceola (best), Robin Hood (best), Silverton (best), Snowcap (best), Tanager.

IRIS: Odanoloc (first), Candlelight (best), Alabaster, Amerind, Desert Dawn, Gilead, Jackrose, Mountain Mist, Rusty Gold.

For anticipation, plant breeding comes near the top of the list. There were rows and rows of seedlings waiting 'til maturing time to bloom. Then we could scarcely wait from morning 'til morning to see the new flowers. Always the culling out of the less choice was tinged with regret, each one hardly less lovely than the chosen ones. The breakfast table was laid with single blossoms to enjoy and study. When a plant is finally recognized as superior, there is a long story of propagation before it can be sufficient in quantity for even a limited market. This generally requires around 5 years.

Besides direct plant breeding, my father worked for perfection by selection. One of his greatest contributions to Colorado horticulture was the development of the french hybrid lilacs on their own root systems instead of by graft. They are entirely hardy in this difficult climate even in mountain towns.

My father's many anonymous memorials still give beauty to a prairie country. People find shade and rest in Denver parks under his trees. There are Rockmont trees in abundance on the Boulder Chautauqua grounds and the Colorado University campus. Mrs. Earle Brown, a member of the Boulder Garden Club, has worked almost single-handed to create a spot of beauty on a previously neglected hillside in back of the high school athletic field. This memorial is named "The Darwin Andrews Arboretum" and is indeed a credit to the woman who never met him.

The activities in our home far exceeded its size and physical comforts. There was neither electricity nor water in the house, yet we had books in abundance, magazines, music, visitors in many scientific pursuits, good conversation, and always flowers. There were trips to the places where the first flowers of spring could be found, and trips to see the last colors of autumn. We needed nothing more!

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THE WINDING ROAD

By LILYGALE FLEISCHER

Have you ever thought of the mountain playgrounds, where so many tourists gather, as God's terminal? After many visits to our nearest playground in Rye, Colorado, just one hour away from our home, I was lyrical with:

Are you weary, heavy laden, burdened with a load of care?
Hasten to our mountain playgrounds, see God's footsteps everywhere.
Marvel at the growth of pine trees anchored firmly in the rock,
Meditate upon their splendor, they withstand the storm's great shock.
Joyfully see wildflowers in abandon, thrill to sight of bird on wing,
Walk the streams for catch of rainbow, let your voice ring out and sing.
Sing a gay song bright with promise as you wend your way along,
Thank God for His mountain playgrounds, yield your heart to His great song.
Soul refreshed, you journey homeward, like the pine trees straight and tall
You stand firm in faith and cherish strength gained at God's terminal.

WE LAST visited this area on May 18 and chose the old road to Lake Isabel (about 10 miles above Rye) for it seems far more scenic to us than the newer paved road fishing enthusiasts choose. Winding roads offer new scenes at every turn, new contacts with busy farmers who willingly stop their work to chat about the history of the area and often refer to some old resident whose knowledge of the "old days" is greater. We noticed that the previous week's 8-inch snow fall had added newer brilliance to the early spring flowers. White loco, Virginia blue bells, wild sweet peas, wild canterbury bells, thimble blossoms, and some flowers we could not name were in abundance. The apple and the plum trees were in full bloom as were dooryard lilacs. Several curious sheep followed us over the bridge as we stopped to view the Muddy Creek canyon. We learned that in years gone by when many bees swarmed along the banks of the Muddy Creek canyon, the farmers used dynamite to force the bees out of the rock and were rewarded with tubs full of honey; that in years when the water was high, there was a spot along the rocky wall where water issued forth as though spouting from a faucet. Our neighbor, Mrs. Hardin pointed out the old Hardin schoolhouse occupied by her grandfather when she was a child, and also pointed out the old Hardin schoolhouse that had been remodeled into a home. She also explained that the farmers had petitioned the road builders to widen this old road, deeming it far more scenic than a new one. True, there are some narrow places now where one must drive carefully when meeting an oncoming car, but it can be managed very nicely and we thrill to the spirit of adventure such an encounter brings! After all we traveled that road when our Ford often had to be wired together with wire from roadside fences, yet we managed to survive. Then, too, this old road is a bit of the unhurried yesteryear we like to remember.

The scrub oak hadn't leafed out at that time, and Mrs. Hardin explained that the farmers in that area only plant potatoes when the leaves of the oak are as large as a mouse's ear. As





A tumbling brook and new vistas greet the traveler at each turn of The Winding Road.

our Dodge climbed higher and higher, inevitably someone asked "What is the altitude here? Why don't they install altimeters on cars?" All along we spied crocuses and kinnikinnick and we stopped to wander to the stream to look for ferns. We camped near the stream at various times during the day until Mr. Fleischer returned with a day's catch of fish for our supper. He was so happy he "sang a gay song, bright with promise" for he prefers wending his way along the streams to sitting in a boat on a lake most of the day.

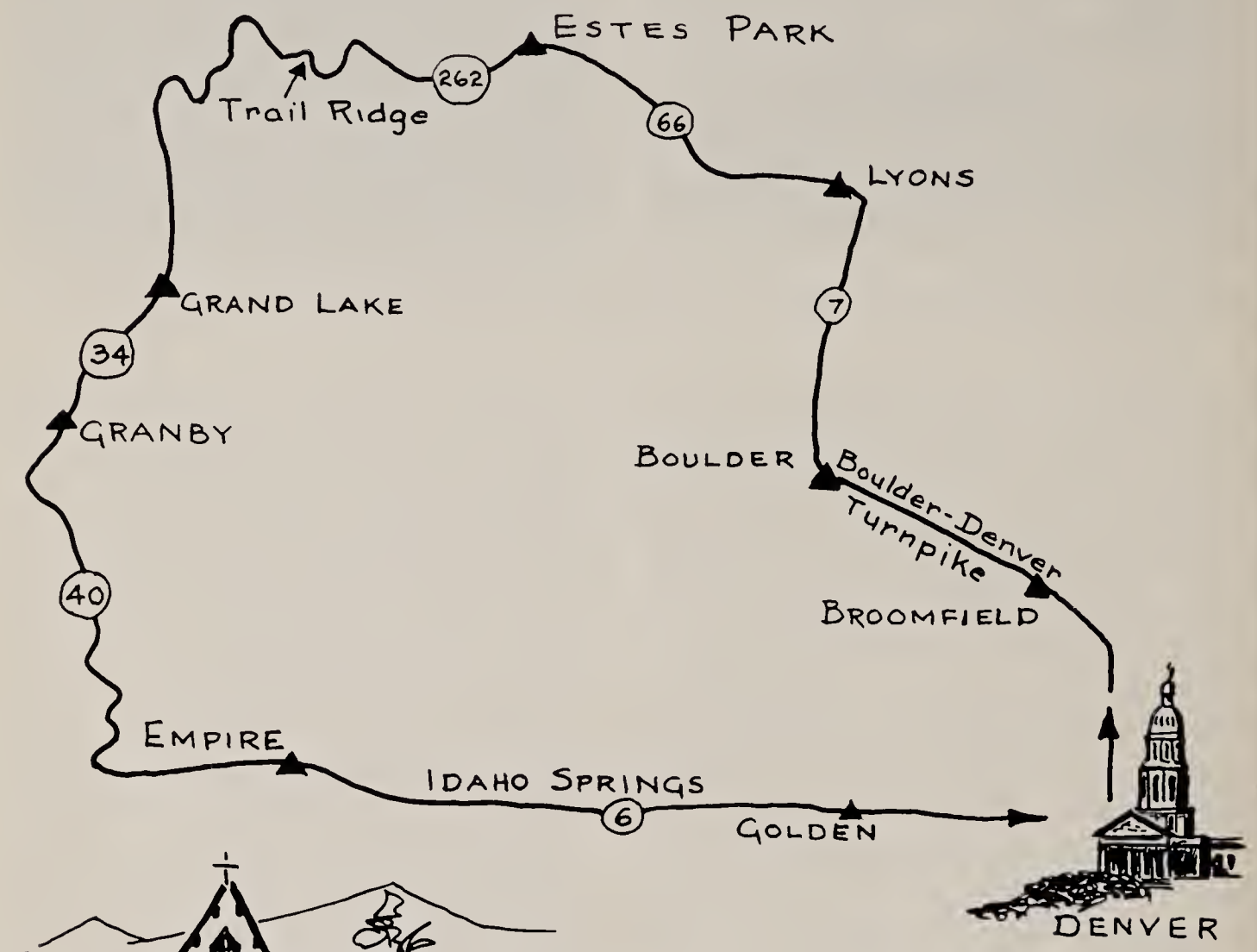
After much loitering on this old road, we finally arrived at Lake Isabel with its expanse of beautiful blue water so quiet in comparison to the rushing stream we left only a few miles back. We plan to go to Rye on the old Lake Isabel road again in a few weeks to see the blue candelabra cones of the tall spruce and the almost translucent, light green of the cones on the other evergreens that grow so luxuriantly along this stream 2 miles this side of Lake Isabel. Here, too, can be found oregon grape bearing yellow clusters of flowers which later turn into grapes that can be made into fine jelly, we are told.

On the way home we discussed our satisfying day and recalled that:

We wandered down the winding road among the forest trees
And pondered bird calls floating down around us to appease
Our quickened hearts that thrilled anew to beauty so divine,
Our lifted eyes encountered a phenomenal design.
The sun-kissed tree tops reveled in affectionate caress,
Displayed their softly gleaming jewels with radiant finesse,
For candelabra cones revealed translucent tint of green,
Of garnet hue, and purpled mist, enhanced by resined sheen.
A prayer of thankfulness welled up in each enchanted heart
As music of the rippling stream defined the Master's art,
And homeward bound we dwelt upon the joys our Lord bestowed
Upon us all as we walked down His winding mountain road.

JUNIOR GREEN THUMB

Let's go to Grand Lake! We start at 8 o'clock in the morning Here's a map showing the way we drive

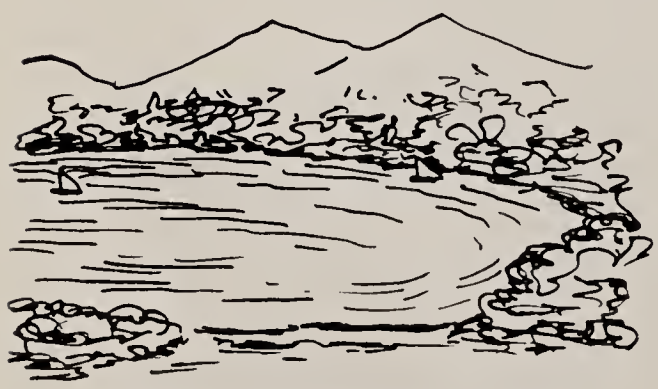




thru Estes Park



along Trail Ridge Road



past Grand Lake

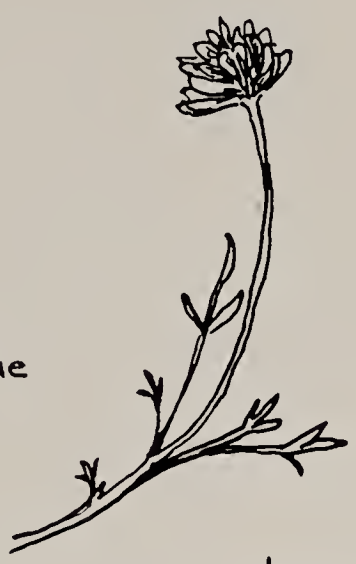
We'll want to stop to walk around. Alpine plants, the kind that live only on high mountains, can be found



fairy primrose
reddish-purple
with yellow center



alpine bluebell
deep purple-blue



alpine clover
white and pink



roseroot
red-purple



shrubbery cinquefoil
yellow



alpine buttercup
bright yellow



We'll probably see a chipmunk or maybe even a young deer. By three in the afternoon, the air is turning chilly. If we leave now, we'll be home in time for supper

by Virginia Sena

JOURNEY TO YESTERDAY

IF you're looking for something different in vacation spots — something the travel magazines clannishly refer to as "off the beaten track" and perhaps garnish with a few other choice adjectives—set your sights for southwestern Colorado and the picturesque town of Silverton, high in the rugged fastnesses of the cloud-touching San Juan Range.

But you'd better hurry if you want to avoid the rush, for this old mining town has come alive in the past few years and is heading for a future never anticipated by the grizzled gold-seekers who first ventured into the area just before the Civil War.

The town originally was named Baker's Park for Captain Charles Baker, the first prospector in the region, who made the discovery of precious metals around 1860. It was rechristened Silverton some years later, according to local tradition, by a mine operator who remarked: "We may not have gold here, but we have silver by the ton."

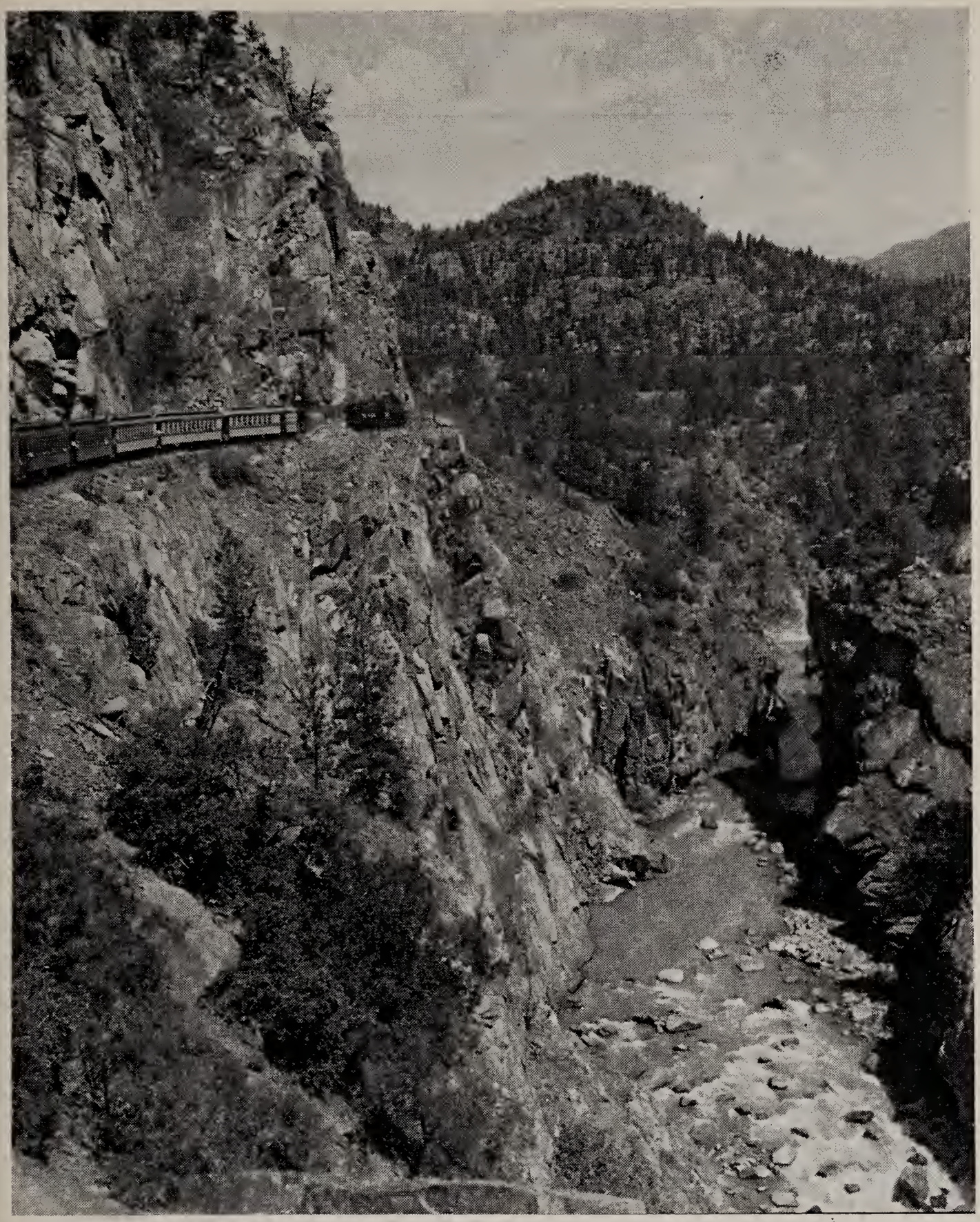
The abundance of marketable minerals in the San Juan mining district (Silverton is the county seat of San Juan County) is evidenced by the fact that more than $300,000,000 has been taken out of these hills in the five basic minerals—gold, silver, copper, lead and zinc—in the period from 1873 to 1953. Spurring the early development of and furnishing vital transportation to the region was the branch line of the Denver & Rio Grande Western Railroad, built in 1882 from Durango to Silverton to open up this then remote area to the shouts and sounds of progress.

Today the silver has played out and the still-large deposits of lead and zinc have fallen victims to declining market conditions. The last blow fell in 1953 when the Shenandoah Dives mines suspended operations, closing the last big mine in the area. But instead of turning into one of the many ghost towns that dot Colorado's western slope, Silverton hitched up its civic belt and proclaimed that it had been a town for something more than 75 years and that it aimed to continue being same for quite a few more. Since that time, the town has turned to another source for survival and seemingly is doing quite well, thank you. The other source, of course, is the steadily growing throng of tourists which each year find their way into this relatively remote but spectacularly beautiful section of the Rocky Mountains.

They come mostly by private automobile over U. S. Highway 550, the famed "Million Dollar Highway," which originally was surveyed and built for wagon travel by Otto Mears, famed "Pathfinder of the San Juans." The road today is an all-weather paved thoroughfare, destined someday to become part of an intercontinental highway system extending from Alaska to Central and South America.

If you ask where the road got its name you're liable to get a variety of explanations. Some will tell you the title was bestowed because it was the first highway built which cost a million dollars; another popular story has it that more than a million dollars worth of gold and silver ores is contained in the roadbed; still others say that it was so named because there is more than a million dollars worth of scenery along the route. And old timers in the area will add their own versions at the drop of a hat.

Another avenue of entrance to Silverton, and one which is becoming in-



The Silverton, ***last narrow gauge passenger train in the country, hugs the walls of Rockwood Canyon above the rushing Animas River on its spectacular*** **Journey to Yesterday** ***between Durango and Silverton on the Denver & Rio Grande Railroad.***

creasingly popular, is the narrow gauge railroad line of the Denver & Rio Grande Western Railroad. Built in 1882 when the San Juan region was a booming mecca for adventurous prospectors, the line was near abandonment in 1953 when the last of the mines closed. But a vanguard of tourists and railfans had "discovered" the little steam-powered train with the vintage equipment which runs the 45 miles between Durango and Silverton and now the train runs at near capacity all summer long—the last regularly-scheduled narrow gauge passenger train in the United States.

In 1955, more than 20,000 passengers rode the train and the railroad constructed a spur from the depot in Silverton to a point nearer the business section for greater convenience.

One of the historic landmarks of Silverton — the famed Grand Imperial Hotel — lately has been completely refurbished and modernized and provides modern accommodations in a Victorian setting. The old world charm of the hotel has been left largely intact by skillful decorators, and a museum of the early days has been added in one wing.

In recent years, Hollywood has come to the San Juans for location shots for some of its most notable western pictures, and Silverton more than once has been used virtually "as is" to represent a western town before the turn of the century. Most recent was its appearance in the movie, "Great Day in the Morning," in which it was used to portray early-day Denver.

Visitors to Silverton now can take high altitude—even higher than the 9300 feet at which the town is located—trips in the relative comfort of sturdy jeeps to old mines perched precariously on steep mountainsides. And other tours can be arranged by willing townsfolk.

Even the young people get into the act. Tow-headed and dark-haired children alike set themselves up in business on convenient street corners, shyly supplying what is probably one of the most indispensable items for American tourists — souvenirs. These souvenirs are unique to most people, although probably not to the residents of a mining town like this —chips and chunks of rocks and minerals found in the area, crystal, mica, feldspar, quartz, and an endless variety of others.

So this is Silverton, the town that wouldn't give up the ghost. With its high board sidewalks and false-fronted stores of another era, it seems a throwback to a dead past. But its doughty citizens are in business there to stay, one way or another, and doing a better than average job of it, too.



The Silverton ***waits in front of the depot at Silverton, Colorado, to make its return trip to Durango over the 45 mile branch line of the Denver & Rio Grande Railroad.***

"ONE FINE DAY"

ON Sunday, June 3, we left Denver for Boulder, there to drive up Boulder Canyon to Eldora where we were to take the old switchback road, now only a trail, to the ghost mining town of Caribou.

In the drive up Boulder Canyon it was exciting to note the high water for it promised an abundance of wildflowers that usually follow the melting of heavy snows. Even here in the canyon we could see beardstongue, blue penstemon, and larkspur.

When we finally reached Eldora, we parked in front of the old hotel, swung our packs on our backs, and started up the old road until we came to a yellow trailer. From there we could see the trail leading off to Caribou. In the boom days of mining, this was a well traveled road. It takes six or seven miles of hiking to get to the old ghost town, and legend has it that the postmistress of Eldora used to carry the mail to Caribou over these seven miles in winter on snow shoes! And it wasn't hard to imagine the kind of winters she must have fought through, for we walked about the length of half a block over a huge snow bank that covered the trail. This on the 3rd of June. Imagine the drifts in dead of winter! No wonder only the strong and lucky survived.

As we had guessed, flowers were lush. Golden Banner bloomed everywhere in great profusion gilding the landscape like solidified sunshine. We couldn't resist stopping for some colored pictures. The foreground of Golden Banner, complimenting the deep blue of the sky with James Peak in the distance separating the two, was captivatingly beautiful. Chokecherries were in bloom too, along with pin cherries and thimbleberries. Farther on, huge beds of kinnickinnick, pink with bloom, created a striking picture and sprinkled here and there for contrast were gaillardia and arnica. As we approached Caribou Flats, the ground seemed completely covered with the flowers of lavender vetch. Higher up where it was even wetter, we found marsh marigolds, globe flowers, the ever faithful mertensia, salsify or false dandelion, and true dandelions big as silver dollars. Pasque flowers joined the riot of color as well as erigeron daisies or fleabane. We waded through a treasure trove of wilderness beauty as we arrived at Caribou with its broken-down old mills, bunk houses, and boarding houses — picturesque reminders of the fickleness of dame fortune and symbols of a way of life in frontier America that will long be remembered. Here we rested and drank in the loveliness all about us.

The walk back to Eldora and the drive back to Denver were tinged with regret for having to leave such beauty behind, but our search for the capricious spring wildflowers had been richly rewarded.

. *As told to us by "A. T."*

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PEEK AT THE MAIL

Dear Editor: I appreciate the article in the May issue by Nickolas di Fillips but as he says, he only touched on the subject lightly. Trees, planting, and exterior landscaping can make a development home somewhat different from its neighbors but homes actually designed by an architect, doing a competent job, are priced out of the market by developers. We built a home six years ago with an individual design of masonry construction with fireplace etc. but when we try to sell this house we find it is priced according to the square footage in the house only. It might as well have been square with cracker-box construction. The number of houses built by individual contractors is terribly small, they mostly do rebuilding (which is expensive beyond reward to the owners) or little patch up jobs.

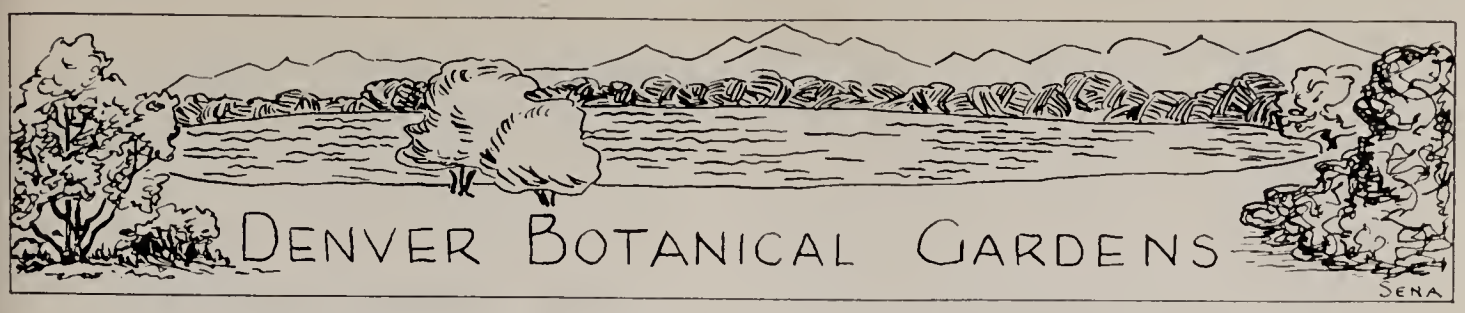
How can we combat this trend toward houses "all the same" financially?

Yours truly,
Alice Sharp
Littleton, Colorado

DEAR SIR: I would like to become a supporting member of the Colorado Forestry and Horticulture Association. I was given a copy of The Green Thumb and have enjoyed it greatly. Thanks to Dr. Moras Shubert, who was my Botany professor at the University of Denver, I have developed an undying love for gardening and botany.

I am enclosing three dollars ($3.00) and will be looking forward to receiving The Green Thumb.

Thank you so much, Mrs. Richard A. Hoffmeister.



ROSES REQUIRE A SPECIAL CARE

By VELLA HOOD CONRAD

"When our Divine Lord finished with all the other flowers, He breathed his whole soul into the rose."—Helen Fowler.

IF ANY plant is immortal, it is the rose. Perhaps that is why roses respond so generously to loving and special care. A care, however, that can be covered in less than 10 basic steps—and to those who truly love roses it is not a chore at all but a labor of love.

Three years ago we started a Municipal Rose Garden in City Park. Through the generosity of Maurice Marshall and Scott Wilmore and many of the national growers we were able to put in about 4000 bushes. In our garden as in yours, we have met problems. We cannot afford to take chances with a public garden as one might in ones own. Much of our diagnosis must be backed with scientific tests. To Mr. John Maletic, we are deeply indebted for the tests and recommendations that he has made. Mr. Tom Lynch has given us full cooperation and help. And by following the basic rules for rose growing, we are now realizing the fruits of our efforts. Multiply 40x100 (for the average home gardener may grow 40 or more roses) and you will understand a part of the magnitude of our project. Four thousand roses, and we must love and care for each rose.

Anyone knowing Mrs. John Evans understands her fondness and interest in roses. Gilbert Sauer and Benny Trujillo are doing a fine job on maintenance. Miss Bertha Durfee is indispensable for data and records and does not miss a thing concerning roses. We now have Mr. R. L. Woerner, the new director, and he, too, is interested in roses. It is full co-operation from all that makes for success. Even the weather conditions have been favorable, and I truly believe that the "Master Gardener" has walked beside me during the hours of despair and with me in the plans and hopes I hold for our rose garden.

Here are the ten basic steps — I want to put them simply, so that anyone wishing to grow roses can.

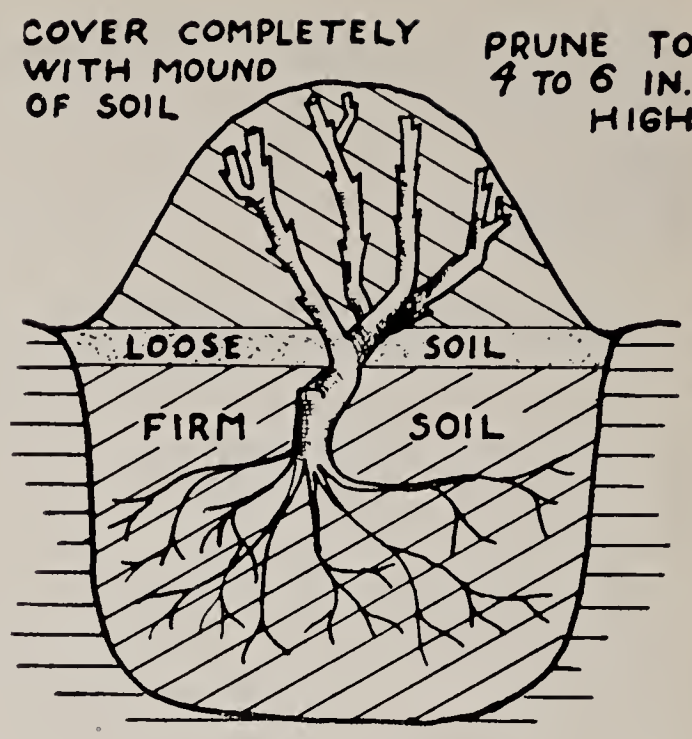
1. Location: Choose a spot for hybrid teas away from the impeding roots of shrubs and trees, and in a place that affords at least 6 hours of sunlight a day (preferably morning.) In the Municipal Garden there is almost full sun all day. Floribundas will tolerate shrubbery and evergreens and may be planted in perennial borders where they make for a splash of color when other plants are on the wane.

2. Drainage: This is absolutely essential for good roses regardless of the type of soil. Roses require water, but they will not tolerate water standing on their roots. A test for good drainage can be easily made by a home gardener by digging test holes 2 feet wide and 2 feet deep and filling them with water. If the water

drains completely away in 2 hours you have adequate drainage. If not, you will have to put in a drainage system and this is not, PLEASE, tin cans and rocks in the bottom of a rose bed. It will require drain tile sloped away from the garden proper.

3. Soil Preparation: Any soil that will grow a good tomato will grow a good rose. Clay soils seem to be the favorite of most rose growers. I hear all kinds of statements and theories on soils and about their being worn out. Frankly, I do not believe it. Soils are only worn out because they have not been cared for properly and because enough humus or the correct conditioners and fertilizers have not been added. I have seen superior roses grown in a new plot for 2 or 3 years. Five years later they are far from superior if you keep taking away and not adding. Soils out here require two things—one is humus, which may be leafmold, cow manure, peatmoss or compost or a combination of all; the other is an acidifier, as most all soils here are highly alkaline. The best and cheapest is agricultural sulphur. Just because a pound will bring the Ph down, don't add ten pounds thinking you are bettering the conditions even more. 1 lb. per 100 square feet is a safe formula to start with. Your roses will tell you if more is needed by the color of their foliage and their ability to digest the other nutrients you add later.

Fall preparation for new rose beds is best. Spade at least 2 feet deep—80% soil, 20% humus, plus 1 lb. of sulphur and 1 lb. of super-phosphate per 100 square feet. Spade and mix well and leave in the rough for spring planting. For new home owners wishing roses the first year, I would recommend potted roses, planted and cared for with the direc-



tions the grower will give you. This is fast becoming an art with many of our local nurserymen and is the answer for many who want roses and cannot prepare the beds for bare-root stock.

4. Selection of Stock and Correct Planting: Always buy No. 1 grade A, 2-year-old, field-grown roses. A cheap rose bush is not a bargain. Again, your nurseryman is your best adviser when it comes to selection of bushes, varieties and hardiness. The plant usually comes trimmed and ready to plant.

Plant hybrid teas at least 2 feet apart, and do dig holes large enough to accommodate the roots. The bud union should be 1½ to 2 inches below the top of the ground. The soil must be firmed around the roots. Plants must be watered in and finally mounded with soil which is not removed until new shoots start pushing through the mound. I do not feed new roses any nitrogen fertilizer the first year. I do water them and I do use mulch.

5. Maintenance: And under this we have 4 different phases.

a. Watering
b. Feeding

c. Mulching or Cultivating
d. Pest and Fungus Control.

a. Roses must have water — deep watering. Red roses require more water than light colors. At the same time they *must not* be drowned. In correctly prepared soil and in the average garden, a good soaking once a week is usually sufficient. I prefer flooding, but early morning sprinkling, unless roses are in full bloom, will not hurt them.

b. Feeding. All established roses require feeding. The first feeding should be applied in the spring when the new growth is from 4 to 6 inches tall.

Water in well, 1 tablespoon of ammonium sulphate for each average sized bush, or use one of the balanced commercial fertilizers. Many use foliar feeding successfully — but this must be applied at the right hour (early morning) and on a day when temperatures are not above 90 degrees. Formulas with a 44% nitrogen or a 23-21-17 will burn if incorrectly applied so the smart gardener reads directions and follows them.

We feed small amounts — more often—in the Municipal Garden. We do not like to feed after the 15th of August because we want our roses to harden off naturally and go into the winter in good condition.

c. Mulching and Cultivation. There is always controversy concerning mulching and/or cultivation. I use both. In early spring we cultivate—get out all the weeds. We do not cultivate deeply. In my own garden I use mulch. Over a period of many years I have found it serves three purposes. It conserves moisture, it eliminates weeds and need for constant cultivation, and it holds down temperatures. And for this I use Canadian peat, but I am sure the peat sold here by any reliable nursery is all right.

d. As soon as there is foliage there are aphids. They are easily controlled with nicotine sulphate (put on when the temperature is above 70 degrees) with Malathion or with Rotenone sprays. In setting up a spray program be sure to check the compatability of your materials. Red spider is the next worst offender, and parathion is the surest for this pest—but not the safest for the average gardener. I would recommend either malathion or one of the miticides. Snout beetles you pick by hand in the early morning hours. They seem to have a short-lived period so this is not too much of a job.

Mildew is the biggest fungus problem here. And for this an ounce of prevention is worth a pound of cure. Use preventive spray—and here again you have choices. Use either a sulphur-containing preparation or one with Karathane, and again watch temperatures. These preparations will burn and discolor bloom if temperature is above 90 degrees.

Blackspot which is less prevalent here is best controlled with Fermate.

It is possible to work out a spray program of compatible sprays that will control almost all of our problems here.

6. Winter protection and Pruning. The final basic step is winter protection and pruning. I wish that I could say we do not have to protect roses here. I know many good growers who do not. But if I said we do not, we would get one of those killing winters, so for this area and for some varieties, it is best and safest to mound the rose plants with clean soil in early fall. I try to get at least 4 inches on before the first of November. Later hill to 8 inches and if we have alternate thawing and freez-

ing use evergreen boughs over and around the mounds.

The only pruning I ever do in the fall is on a bush that grows over 5 feet tall. Then I cut it back to about 3 feet—tying it together if it is too heavy. Otherwise I let it alone for our Colorado winters have a way of doing a lot of pruning for us!

When spring comes, I cut back to live wood, always trying to save and shape the bush for outward growth. I take out all twiggy and small growth.

We have many plans for the Rose Garden at City Park. We want replacement beds, test beds, and we even dream of hybridizing. We want to grow good and beautiful roses. This garden is for all to enjoy and learn from.

PARK BOARD ADVISORY COUNCIL MEETS

THE State Park Board Advisory Council met at Horticulture House on May 25 to consider the park situation as of July 1. As stated in the Horticulture House News Letter of March 1, $12,000 was appropriated for the work of the Park and Recreation Board for the year starting July 1, but the legislature did not appropriate any money for a director.

Presumably development of wayside parks will be continued by a crew of untrained honor inmates of the Buena Vista Reformatory under the direction of prison guards, also untrained in the installation of the simple picnic tables, fire grates, shelters usually found at these stopping places. The members of the Park and Recreation Board have the duties and responsibilities of their regular positions, so it is doubtful if they will have time to supervise park activities.

The Advisory Council has requested a meeting with the Park and Recreation Board to discuss plans for handling the way-side park development program during the next fiscal year, also the location of sites. The possibility of assistance from the national park service during this emergency period is also being investigated.

Bert Hanna's column in the Denver Post of June 10 pays tribute to retiring Park Director Lee's many years of service to forestry and conservation in Colorado. He concludes by quoting a letter from a friend to the effect that Everett Lee has faults as we all have. Then he adds:

"Many times I thought his lack of tact caused him many of his problems. However, I have always been completely convinced of his sincerity and conscientious attitude toward management and general conservation programs.

"Surely this state owes this man some recognition for his many years of devoted service."

FRED R. JOHNSON

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The Green Thumb

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August, 1956 25 Cents

The Green Thumb

COLORADO'S GARDEN MAGAZINE

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The Green Thumb

Vol. 13 AUGUST, 1956 No. 7

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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Plus Mrs. Vella Conrad and Fred R. Johnson
Assistant Secretary-Treasurer.....Mrs. Ruth E. Sauer
Editor.....Patrick J. Gallavan

CALENDAR OF EVENTS

August 6—"Fun with Flowers" first Monday of each month, Garden Center W. Alameda Avenue and Kalamath St. 10:00 a.m.

August 8—Look and Learn Garden Tour. 10:00 a.m. to 5:00 p.m.

August 12—Third Annual Exhibition of the Colorado Gladiolus Society, Ford Motor Company, 2650 E. 40th Ave. 2:00-5.30 p.m. Admission Free. Public invited.

August 13—Botany Club meets the second Monday of each month, 8:00 p.m. Horticulture House.

August 15-16 — Annual 4-H Fair, City Auditorium. Public invited. Colorado Federation of Garden Clubs, Inc., Annual Flower Show, Titled "Floral Hit Parade", City Auditorium.

Annual Green Thumb Garden Club flower show—Monday, August 20, 3 p.m. to 8 p.m., at Washington Park Community Church, 1195 South Race. Educational display of seedums.

Green Thumb Program—9:00 a.m. every Saturday, KLZ on your radio dial. Pat Gallavan, Horticulturist, with Bill Jones.

ERRATA—July 1956 Issue

P. 25—Shrubbery cinquefoil should be *shrubby* cinquefoil.

The name of the author of the article *Journey to Yesterday* so many of you inquired about is Joe Martin, writer for Ball & Davidson Advertising Agency.

PATRICK J. GALLAVAN.....*Editor* MRS. HELEN FOWLER.....*Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. GILBERT SAUER, *Custodians*

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FREE **12 Choice Iris** **FREE**

Iris Day at Lemoine Bechtold's!

Mr. Bechtold has again offered to give many of his choice iris to members of the Association. On August 8, while they last, he will give each member 1 dozen choice iris and for those securing a new member for the Association, he offers as a bonus a dozen more. Just stop by Lemoine's at 4201 South University Boulevard between 10 a.m. and 5 p.m. on August 8. ***P.S. It's close to several of the homes on the garden tour that day.***

1957 HORTICULTURAL CONGRESS INVITED TO DENVER

FRED R. JOHNSON

THE Colorado Forestry and Horticulture Association has invited the American Horticultural Council to hold its 12th annual congress in Denver in the fall of 1957. The American Horticultural Council is a national coordinating body designed to bring together representatives of all interests concerned with the welfare and progress of horticulture.

The Council holds an annual congress, devoted to the scientific and educational aspects of horticulture. The 1955 Congress was held in Washington, D. C. The 1957 session will be held in Lansing, Michigan, October 21-23.

Phillip Alampi of New York City is president; Donald Wyman of the Arnold Arboretum, Jamaica Plains, Mass., is secretary; Richard P. White, executive vice president of the American Association of Nurserymen, Washington, D. C., is the member of the Executive Committee with whom negotiations are being conducted for the Congress.

The Denver Botanical Garden Foundation has also extended an invitation to the Council to meet in Denver and Stanley H. Brown, president of the Colorado Association of Nurserymen, thinks that his group will also want to be one of the sponsoring organizations, although the subject will have to be discussed at the mid-summer meeting of his association.

Mr. White says that the congress will have about 125 delegates—men prominent in horticulture and floriculture, also nurserymen, scientists, educators, etc.

The meeting should also give a big boost to horticulture and gardening in Denver.

Since the foregoing was written, word has been received that the executive committee of the board of directors of the American Horticultural Council has approved holding the 12th annual horticultural congress in Denver in 1957.

LOOK AND LEARN GARDEN TOURS

WITH gardens on display in southeast Denver, Cherry Hills, and Littleton, our last garden tour of this season promises to be a good one. August is considered a time for relaxation in the garden. During this period start thinking about some of the things you might want to change in your garden next season, then look for these features in the gardens on this last Look and Learn Tour. You will be surprised at how many good ideas can be picked up this way.

Put a circle around August 8 on your calendar and plan to visit these gardens between the hours of 10 a.m. and 5 p.m. The following gardens will be shown:

Mr. and Mrs. Kent M. Hutton, 4141 South Colorado Blvd.

Mr. Waldo E. Rennie, 4600 South Colorado Blvd.

Dr. and Mrs. Edward J. Swets, 1420 East Cornell Avenue.

Mr. and Mrs. George R. Cannon, 13 Sunset Drive.

Mr. and Mrs. J. Kernan Weckbaugh, 9 Cherry Hills Drive, Cherry Hills Village.

Mr. and Mrs. John W. Hyer, 8 Lynn Road, Cherry Hills Village.

Mr. and Mrs. Edwin H. Grant, Bowles Avenue, Littleton, 1½ miles west of Santa Fe Drive.

PRESIDENT GETS HELP!!!

HERBERT Gundell, President of the Colorado Forestry and Horticulture Association announces the new addition to his staff in the person of Charles C. Fischer as Assistant Denver County Agent.



Mr. Fischer was graduated last month with a Masters degree in science in the field of ornamental horticulture from Michigan University. His recent experiences at the University should prove to be of benefit to citizens in Denver County. We are also hopeful that Mr. Fischer will become active in the Association and assist in the conduct of our affairs wherever his talents can be employed advantageously.

Our best wishes to Mr. Fischer in his new position.

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ARRANGEMENT OF THE MONTH

By MR. AND MRS. RAY TURNURE

Pink roses and English ivy are arranged in a hogarth (or "S" curve). The vase is alabaster with flecks of pink.

MOUNTAIN PLANTS IN CITY GARDENS

By M. WALTER PESMAN

WILL aspens grow in lower altitudes? People who "know it all" say no. Then an unbeliever gives it a try and succeeds. There are a number of patches of good aspen trees in Denver and in places of similar altitude. But numbers of them have succumbed to an attack of scale or disease. Is it a question of who has or who hasn't a "green thumb?" Hardly! A green thumb is generally nothing more or less than good practical plant knowledge. Almost anybody can learn to recognize plant troubles before they become fatal. A plant *shows* lack of vitality by a number of signs: droopy appearance, wrong color, lack of satisfactory growth. Catch trouble in time. Grow aspens in your garden.

The problem of growing aspens has been used mostly as an illustration. There are many other doubtful plants on our list, both natives and exotics. Somewhere there is a limit of what will or will not grow. But the line is not as hard and fast as one might think. A great many "doubtful" ones can be coaxed to grow by being given the right treatment — soil, location, etc. Let us particularly consider the case of native Rocky Mountain plants by beginning with fundamentals. Why do aspens naturally grow in the montane and subalpine zone and not on the plains? And what plants are hard to transplant?

First of all, we must recognize that there is a big difference between nursery plants that have been accustomed to being transplanted for generations and generations as against "wild" plants that stay where they start their life, usually beginning as a seed. Transplanting just is not on their program, and most of them resent it. It doesn't mean that they cannot be "tamed" but it may take a number of generations during which only those individuals that can accommodate themselves to changed environment survive and pass on that adaptability to their progeny. It is as simple as that: the survival of the adaptable. After all, lilacs have been nursery-grown for centuries, most alpine plants have not.

From practical experience it has been found that most native shrubs should be cut back severely when transplanted. It is not impossible that our modern wonder chemicals like rootone and others can help to make transplanting of natives easier. Again, a number of wildlings have runners that start new plants.

Transplanting is only the first step. After all, in case of dire necessity, there is always the possibility of starting plants from seeds. Then the problem is: Can we coax this seedling to keep growing under the unnatural condition?

That brings us to second question: What determines the ability of a wild plant to grow in its natural environment? "Altitude," you may say. An easy way out, but much too indefinite. Growth conditions changing with altitude are temperature, rainfall, and soil, each with its peculiarities.

It might seem that a higher average temperature in lower elevations would all be to the good for mountain plants. The tendency is always to say, for instance, "This tree will grow in such cold places as Michigan or Central City so it must be hardy in Rocky Ford." But suppose you are an aspen used to budding in June

and all of a sudden the warm spring days come in April. Then what do you do? After all, a long resting period may be quite important. Or, again, suppose you, as an aspen, have been used to shedding your leaves in early October and the warm temperature tempts you to hold off until late November (not to mention the hot July days that you are not accustomed to)?

Some plants can take such changes in growing habits. Others cannot. As a general rule, it is best to avoid extremes in temperatures which put a strain on newly transplanted test cases. The practical rule for all tryouts is to plant them in locations where they get east and north exposure away from the direct sun from the south and west. The northeast corner of a building generally provides the best growing conditions.

As we get up higher in the mountains we are apt to have more rainfall, or rain-and-snowfall, to be more accurate. The total amount is not too important since we can add more water by irrigation at lower altitudes. In fact, we might improve on nature by providing water at just the right time. That might be very pleasant for a transplanted mountain plant.

Two other conditions are less easily provided, namely, air humidity and a prolonged bank of snow in winter time. Both are highly important for success in growing mountain plants at lower altitudes. No doubt a number of plants need the protection that snow provides in midwinter. Where it is not provided naturally at lower altitudes, it may be possible to substitute another kind of mulch. We must keep in mind that the important thing is a continuation of an even temperature of the soil, *not* a warm soil which might actually do considerable damage.

Then too, in summer, some mountain plants may be used to more frequent rains than we get at lower altitudes. These may be imitated by sprinkling on condition that sprinkling in full sunshine be avoided. Greater air humidity is very very difficult to provide, no matter how hard we may try.

Lastly we must consider what effect soil may have on a plant that is moved to lower altitudes. In Colorado we find a gradual change from alkalinity to acidity as we climb the mountains. The difference may be considerable. Thus, a soil in Grand Junction or Delta might be pH 8.4 (quite alkaline) and that of a marshy area just below timberline pH 4.8 (which is acid). Few acid-loving plants would be able to accommodate themselves to the soil of Delta. They would show a brown-rimmed leaf just as if they had been poisoned (and they actually would be).

Yes, certainly there are some remedies, or soil amenders, as we call them. Aluminum sulfate, citric acid, tannic acid, peatmoss, etc., can be added to the soil singly or in combination or directly to the tree, and the newly transplanted victim may survive—even accommodate itself to the strange new surrounding. At best it is an uphill game. Yet I know some inveterate gardeners who are willing to go to the trouble of preparing an acid garden and will even irrigate it with rainwater caught in a barrel since the average water system is again alkaline.

In addition to this question of acidity in mountain soil, there is its physical condition. A number of plants in the subalpine zone grow in a peaty muck, almost saturated with water. Others must have running water around their feet, such as monkey-

flower and Parrys primrose. This complicates matters still further. How can we create that sort of a condition in gardens at low altitude?

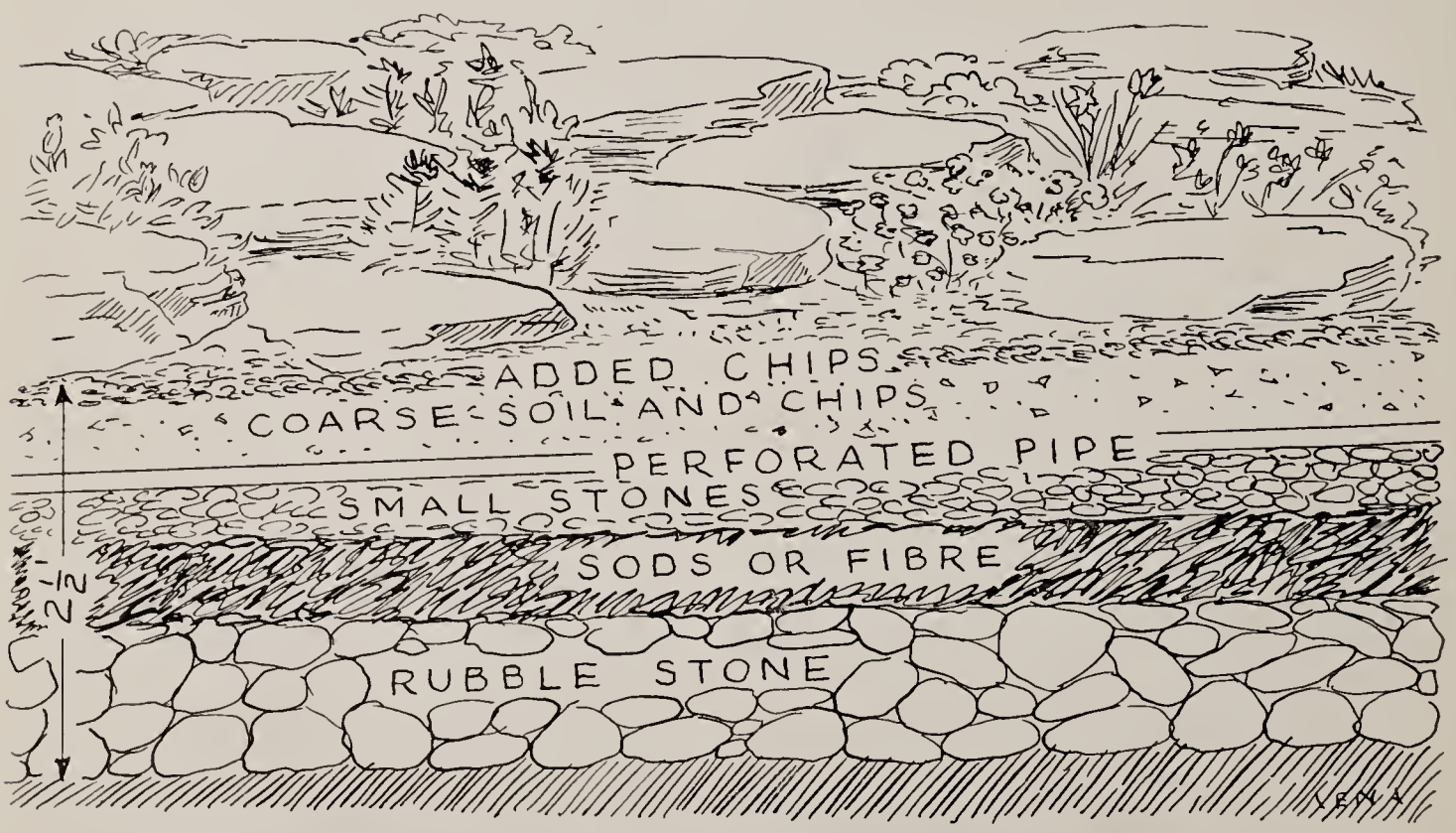
A number of years ago we heard a great deal about so-called "moraine gardens." They are representations of a natural moraine which is an accumulation of stone fragments deposited by a glacier through which ice-cold water flows all during the summer. In winter the plants of such a moraine are protected by a deep layer of snow. Here, then, is a combination of excellent drainage in summer accompanied by flowing water—cold water. A moraine garden can be reproduced by keeping drainage and cold running water in mind. It is the only way in which we can grow particular plants used to particular conditions such as the true bog plants of the subalpine zone which must have *their* own particular soil, location and water requirements. For a few of the true alpines growing far above timberline, the only solution is a "cold-house" with alpine air conditioning. There is no reason why an alpine meadow cannot be reproduced in a glass house just as well as a tropical forest. We now have all the mechanics in modern air conditioning—all that is needed is brains to apply them.

Practical Summary

No problem in the artificial growing of flora is simple. Only those plants that have been transplanted for generations accommodate themselves easily to new conditions. Most of the common stock in the nursery trade belongs in this group.

Wild plants grow naturally in their particular conditions because they have evolved that way. To grow them under different conditions may require a careful study of their needs regarding temperature, moisture, and soil conditions. At best, the shock of transplanting is hard on such plants, and they may have to be cut back more than the average nursery plant.

Mountain plants in general grow



Moraine-type Garden in Cross Section

under conditions that may be hard to imitate on the plains. On the whole, north and east exposures are best, particularly in overcoming winter difficulties.

Aspen, thimbleberry, chokecherry, ninebark, hawthorne, dogwood, currant, willow, snowberry, shrubby cinquefoil, wild rose, pink locust, native sumac, none of these are too hard to transplant. Difficult are kinnikinnick, birdcherry, and rock spirea. Almost impossible are the scrub oaks.

When it comes to growing plants of alpine and subalpine locations, we must make a special effort to imitate conditions under which they are happy. Special soil, added winter protection (mulch), and even a moraine garden may be indicated. And, above all, much, much common sense!

DENVER COUNTY 4-H CLUBS PLAN CITY FAIR

APPROXIMATELY 2,000 4-H boys and girls, from 9 to 17, will stage the 13th annual 4-H Fair at the City Auditorium on August 15 and 16. These boys and girls will exhibit articles made during the past year in the projects including Gardening, Mechanics, Clothing, Safety, Foods, Home Furnishings, Electricity, Home Nursing, First Aid, and many others. This practical project work is carried on under the leadership of 200 volunteer adult leaders cooperating with the Denver County Extension Service.

Judging of exhibits will begin the 4-H Fair on August 15. Two evening programs will provide entertainment for the families and friends of 4-H. Talent numbers, educational contests and demonstrations by 4-H members will be daily features of the "Big City" Fair.

The 4-H Dress Revue, which precedes the Fair will be held on August 8, at North High School Auditorium. Approximately three-hundred girls enrolled in Clothing will model garments they have made. The Dress Revue Champion wins a free trip to State Fair as well as a modeling scholarship.

The Summer Playground program of the Denver Public Schools will also exhibit handicrafts and a variety of other articles representative of their summertime activity.

COTTONWOOD GARDEN SHOP

Patio and Barbecue Accessories
Charcoal
Madonna Lilies and Don't Forget the Bulbs in September and October for Glorious Spring Bloom

COTTONWOOD GARDEN SHOP

4849 S. Santa Fe Drive *George and Sue Kelly*

DIVIDING AND



This crowded clump was overdue for dividing in 1955. A single rhizome had been planted in 1950. Notice center of clump where rhizomes are growing over one another.

Clump was cleaned with hose stream after being dug. Rhizomes in center have very few white feeding roots, while healthy growing rhizomes circle the clump.





Old bloomstalks are separated from healthy, growing rhizomes. "Doubles" as in foreground are preferred by some for replanting. Before replanting wash rhizomes thoroughly.

PLANTING IRIS

Dig in plant food and cultivate well before planting new bed. Two slanting holes are dug, with a dividing ridge left in center.





Rhizome is placed directly over center of ridge with feeding roots spread evenly to each side. Thus, the plant is anchored securely.



From either side pull in dirt toward plant. Proper planting depth can be regulated by pressing on top of root. Firm with foot. Water well.

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LICHENS—ONLY SURVIVORS?

By SAM SHUSHAN and WILLIAM A. WEBER

Science fiction writers like to picture the earth, some billions of years from now, as a barren, cold, and gloomy planet from which all but a few simple forms of life will have vanished. They also like to speculate on the organisms which might survive on a dying earth. As natural resources diminish and the earth becomes less and less able to support large numbers of plants and animals, the survivors among living things will necessarily be forms which make relatively small demands on the environment for space and food, which can compete successfully with other forms of life, and which adapt themselves to progressively disadvantageous changes in their environments. Only the lichens meet all these conditions —at least in the minds of the writers of science fiction.

Some stories identify lichens as among the first forms of land life on the earth; others portray these simple plants as the only living things on other planets. In a recent radio fantasy, a "Space Cadet" did battle with some strange and fearsome lichens which emitted clouds of invisible lethal gases, although within the hour this "creature of outer space" succumbed to the advances of twenty-fifth century science. If we are to believe the various accounts, lichens must be endowed with extreme tenacity and endurance; their longevity and resistance to adverse conditions must be phenomenal, and they would appear to merit being at the head of a list of "last survivors."

Fiction usually has at least some basis in fact. Much science fiction is admittedly absurd, but even when out-and-out fantasy is separated from what might be true, there remains the fact that for most people lichens are as mysterious as fiction writers make them. What are lichens anyway? At best, inadequate answers are given in most textbooks. A college student meets the "lichen" probably once in his career, in the course in elementary biology. His textbook, more than four hundred pages long, devotes perhaps a half-page to the subject. He is informed that lichens are a peculiar group of simple plants in which a fungus and some algae live together as a single duplex organism. His book usually explains that the fungus and the algae are more or less mutually dependent, the fungus contributing shelter, moisture, and minerals, while the algae manufacture complex food materials. At least the student learns that lichens are unique organisms. But he has not penetrated the mystery of their uniqueness.

A multitude of questions must be answered before a lichen can really be understood. What is a lichen species if it is at the same time two species; how and why did such a form of life arise; why are lichens so successful that more than twenty thousand kinds of them are spread over the surface of the globe; are they ravaged by disease, eaten by animals; do they live forever? Let us go in search of possible answers.

First of all, just how does one recognize a lichen? In the animal world, the various birds, mammals, reptiles, and insects have characteristics which even a child can recognize. Without scientific training most people can easily master the differences between lions, tigers, leopards, bobcats, or house cats, even though these

animals are very closely related biologically. In the entire plant kingdom, on the other hand, the total range of variation is small compared to the variety of form and structure found in even a single related group of animals. All plants have essentially the same general plan of construction but, although differences exist, they are not nearly so apparent to the layman as are the differences between animals. And lichens are the most difficult to recognize, because here the difference is a microscopic one, namely the presence of green unicellular plants scattered amidst a cottony mesh of fungus threads.

Although each lichen species has its own distinctive appearance, tremendous variation exists from species to species. In shape they range from spheres, threads, tiny bushes, flakes and sheets to amorphous powdery masses. In color the plant bodies, or thalli, rival the hues of the rainbow. When dry, they do not wither, but become rigid and brittle; when wet, they are soft and pliable, but tough. Because of their lack of complex organization, they are seldom more than an inch tall and yet they may range from fractions of an inch to several feet in length in the hanging varieties. The majority of them show minute saucer- or button-shaped discs on their thalli, although in some these "fruiting" structures are hidden from view. Many of them are sprinkled with small powdery masses —powder which contains the "makings" of future lichens.

Lichens betray themselves more by what they are not than by what they are. They never have flowers, fruits, cones, or seeds. They never possess leaves, roots, or stems. And rarely are they grass-green in color. Lichens, therefore, can hardly be mistaken for mosses, ferns, or any of the higher plants, since these are usually rather complex, leafy plants with a true green color. Probably the most difficult task for an amateur is to distinguish a lichen from its nearest relative the fungus, because fungi superficially resemble many of the lichens which grow on trees, dead wood, or soil. However, if one scratches the thallus or smashes a bit of it, the green of the algal cells hidden within becomes apparent if the plant is a lichen.

Lichens are responsible for much of the subtle color patterns of the rocks and, to a smaller degree, those of the trees and soil. Unless one looks closely at a lichen-covered boulder, he will find it difficult to determine whether its color pattern derives from a mineral stain, or a few crystals of hornblende, or the plant body of a lichen, so remarkably do the lichens blend in with the natural features of surfaces on which they grow. Little wonder that the average hiker seldom notices them. Some lichens look like bird-droppings on rock, pieces of charred paper, splotches of paint, miniature cobblestones, varicolored mosaics; others are branched, bushy, standing erect on the heath or jutting out in peculiar directions from tree trunks or dead branches. In humid climates, the "old-man's beard" hangs down from the branches of trees in festoons several feet long, providing nesting material for hummingbirds and warblers. Still other kinds spread out in flat gray sheets over the bare earth or on the smooth bark of trees, forming interesting rosette designs. A few kinds live unattached, blowing from place to place as the wind moves them, sometimes piling up in deep drifts against snow fences. A bleached whale skeleton, a roof of cedar-shakes, some canvas sail-cloth washed up on the beach,

tombstones in a churchyard, a cement walk, a rock chimney, or an outdoor fireplace, all sooner or later become the homes of lichens.

But what is a lichen biologically speaking? The answer to this question is implicit in another question: what is a fungus? Many botanists believe that the fungi, which include mushrooms, *Penicillium,* mildews, and the like, are descendants of algae, the simplest of the green plants, which have lost their chlorophyll. The non-green algae, unable to manufacture their food in the manner of normal green plants, evolved a method of obtaining ready-made food by becoming parasites or scavangers. The fungi, as any farmer can testify, have become eminently successful at this game, for there are few kinds of plants which do not have some type of fungus parasite to make life miserable for them.

A few of these fungi, however, solve the food problem in another way, a unique way which creates the lichen. They simply permit stray algal colonies to develop within the rather dense meshes of their own bodies. Then they feed on a few algae at a time, while allowing the rest to reproduce normally. They eat their algae cake and have it too, maintaining a sort of "ever-normal granary."

What happens when the fungus is experimentally removed from the algae? The algae seem to do very well; in fact, most of the algal types found in lichens happen to be those which are commonly encountered in free-living states. The fungus, on the other hand, must be reared on a special medium and provided with food; but even so, the fungus never develops into a typical "lichen" plant. It is unable to produce its characteristic spores and, in this respect at least, behaves abnormally. In other words, the lichen species really is something unique; it is not merely a combination of two species of different things which happen to grow together. The individual produced in tandem is completely different from the sum of the two individuals taken separately! The Gestalt Theory of psychologists, in which the whole is greater than the sum of its parts, describes the lichen's situation nicely.

Leading this kind of double life poses problems. The lichen, in order to reproduce its own kind, must somehow reproduce both of its parts simultaneously. The normal method of reproduction of the fungus is by the dispersal of tiny cells called spores. The chance of such a spore reproducing the lichen depends upon its landing on a spot which happens to be already occupied by that proper kind of algae and to be a congenial habitat for the lichen. How many times these conditions are met we do not know, but we do know that a number of lichen species have completely dispensed with the production of spores as a means of reproduction. More commonly, the lichen reproduces by pinching off a bit of its thallus, or plant body, containing a little fungus tissue and a number of algae cells. This can be accomplished by a simple mechanical breakage or by the elaboration of powdery granules or lobes, which become detached and blow about the countryside. When these "soredia" alight on a favorable site, they are ready to take up housekeeping without further delay.

"Without further delay?" Actually, lichens are probably the slowest-growing of all living things. Even foliose, or leafy lichens increase at the rate of only one-half inch in di-

ameter in a year, and they are some of the fastest growing types. Some fruticose, or shrubby, lichens grow at a rate rapid enough to be nuisances on fruit trees, even causing in some cases damage to the trees. But the crust lichens are the experts at the "slowdown." Dr. W. S. Cooper observed crust lichen colonies near Lake Superior for seventeen years and reported no apparent change in the size of the plants. Cemeteries provide fairly accurate evidence on the growth rate of the lichens and the rate of invasion of new rock surfaces. In an old cemetery in Wichita, Kansas, only a few tombstones less than fifty years old had any lichens on them at all, while those over a half-century old had only a scattering of "young" colonies. One set of matched tombstones of natural red sand stone was covered with a multitude of lichen species. We learned from the family who own the plot that these stones had been imported from Oklahoma, lichens and all, in order to satisfy a whim of one of the "occupants." The measurement of lichen growth is not a popular research project; the subject usually outlives the researcher.

In the matter of growth rate, lichens demonstrate superior survival value. A slow rate of growth usually implies a low rate of metabolism, ability to exist on less food, less water, less oxygen, and few minerals. It has been claimed that lichens, being the first plants to colonize bare rock, are therefore the creators of the first soil and pave the way for all other forms of vegetation. The success of a lichen, however, depends very often on how long it can postpone the event of its replacement by other plants. Most lichens, at least the crustose forms, enjoy an extended tenancy.

Another reason for the longevity of lichens is that they have surprisingly few natural enemies. Several species are eaten by wild animals, especially in the arctic regions. But these species often grow so rapidly and in such great quantity that they may be harvested as hay. The damage done by insects, slugs, and mites appears to be relatively slight. Probably the most serious scourges of lichens are those fungi and other lichens which grow over the thalli and sometimes even live inside them.

"Out of the frying pan and into the fire" rather aptly describes the existence of a lichen. Condemned to sit upon a rock forever, alternately freezing and frying, soaking and sizzling, year in and year out—that is the life of a lichen. Few other organisms are subjected to such frightful extremes of climates, yet live to tell about it. In 1932, P. Becquerel air-dried and oven-dried the thalli of several lichens. He then exposed them to temperatures of 268 degrees Centigrade (about 514 degrees Fahrenheit) from one to seven hours. Such temperatures will char paper, yet when the lichens returned to room temperature, they resumed their normal metabolic processes.

Lichens rival the sponges in their ability to soak up water, but contrariwise, no sponge would be able to survive the extreme desiccation which lichens take as a matter of course. Neubauer found that the water content of some lichens varies from two per cent of their dry weight on dry days to over three hundred per cent on rainy days.

So as our fiction writers suggest, lichens are seemingly indestructible. Nevertheless, lichens do die and when this happens they are soon destroyed by the action of the elements and the scavengers in which Nature abounds. However resistant they may be to

changes in temperature and moisture, lichens seem to be exceedingly sensitive to chemical and physical impurities in the air. For this reason, they are seldom found in quantity around metropolitan areas. Even small towns have a meager lichen population compared to that of the open country. The soot, grime, carbon monoxide from automobiles, and gases spewed forth from the smokestacks of industries are too much for them.

Dr. Volkmar Vareschi, a Venezuelan botanist, believes that this sensitivity of lichens to foul air may be a cheap and reliable indicator of healthful air conditions, and that lichens may have a useful application in solving problems in sanitary engineering. Not long ago canary birds were kept in coal mines to serve as alarms when the oxygen supply neared exhaustion; perhaps lichens can be used in a similar way on a larger scale. By making a lichen census on the trees which line the streets of the city of Caracas, Venezuela, Vareschi was able to divide the city into four zones. The first, a zone of pure country air, was one in which the foliose and fruticose lichens were abundant, well developed, and frequently possessed fruiting bodies. The second zone, of slightly impure air, was one in which the fruticose lichens were absent but where the foliose lichens were still normal. The third zone, of average impure air, contained only a few kinds of very resistant foliose lichens, and the fourth zone was what he called a lichen desert, in which the air was so foul that no lichens were able to develop normally. But these lichen deserts were not necessarily in the center of town. Vareschi found Caracas to be almost an ideal city, where the intelligent placing of parks, along with the natural arrangement of the canyons flanking the area, forms a great natural air-conditioning system in which the normal air currents continually replenish the supply of pure air.

So long, then, as the universe has some fresh air, the lichens are likely to survive many other forms of living organisms. They have a unique ability to exist in habitats which are shunned by higher forms of life; they have solved the food problem; they have devised the simplest type of reproduction imaginable; their metabolism is extremely slow; and they show a maximum ability to withstand extreme changes in environmental conditions. History suggests that predictions, if based on a grain of truth, all too frequently come true. The science fiction writer of today, armed with facts rather than fancies, probably could make a good case for the lichen as the only survivor.



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OUTDOOR GOOD MANNERS

By CALIFORNIA CONSERVATION COUNCIL

WHETHER you spend a month camping in the lonely fastnesses of the High Sierras or Rockies or merely take your recreation in the form of an occasional Sunday picnic in an urban park, or by the roadside, you carry with you an obligation to your fellow citizens. This obligation you will fulfill only if you remember that the outdoors which you enjoy is a heritage shared with everyone who has the privilege of living in our great, free America. If you are a good American, you will do your utmost to pass this great heritage on unmarred to those here now and to those who come after.

1. LEAVE A CLEAN ROADSIDE. No scenery can be beautiful if it is littered with trash. *Carry a paper sack with you for disposable waste.* Women, particularly, should apply their good housekeeping instincts to family use of the great outdoors. Roadside neatness enhances the dullest highway. *Trash mars the most beautiful park, forest or roadside.*

2. LEAVE A CLEAN CAMP. If you are camping or picnicking, do not mutilate trees or shrubbery. If you must cut or carve, get a stick and whittle. Clean up your cans and papers—*bury, burn* or *bring them home.* If improvements are supplied, treat them as you would your own furnishings at home. Whether you are out for a few hours or a few weeks, leave a clean record behind you.

3. RESPECT THE FISH AND GAME LAWS. There's more honor and fun in giving the game a square deal than in getting the legal bag limit. Take proper care of your meat and fish. Don't kill for the fun of it—anyone can do that—and don't shoot songsters or other protected birds or animals. One after another of our game animals and even some of our "commercial fish" are decreasing rapidly.

4. BE CAREFUL WITH FIREARMS. Be careful where you shoot. Keep in mind that a bullet from a .22 calibre rifle can be dangerous a mile away from the point of firing. Treat every firearm as though it were loaded, at home or in the field. It is sometimes an "empty" gun which brings tragedy. Remember: *Your gun cannot think, so you must!* Help develop sports fields on which to do your practicing.

5. HELP PREVENT FIRES. During the dry season and droughts several million acres of the farmers fields and our precious watershed cover are a regular tinderbox. A carelessly dropped glowing cigarette; a lighted match which has failed to go out when flipped away; coals from an improperly extinguished camp fire caught by a vagrant breeze; a casually dropped friction match later ignited by the teeth of a rodent or the hoof of an animal; the exhaust from a car parked in dry grass or weeds; even on occasion steel striking a flinty rock—all can be the possible spark upon which will start a blazing inferno rushing through forest cover or the farmer's field. Everywhere in outdoor California your eye will meet the appeal "Help Prevent Fires." If you heed this warning appeal, your conscience will not be bothered later that you perhaps were the unconscious cause of some holocaust which destroyed valuable property and perhaps human life as well. Since man, either consciously or uncon-

sciously, is the cause of most disastrous fires, *you, yourself must develop a fire consciousness.* If you smoke, do so only in a safe place or a designated spot. Be sure your match is out. Don't carry loose friction matches. Be careful of your camp or picnic fires—put them out with water, then bury them. *Everyone should teach smokers to make it a habit to put out matches and cigarettes everytime, everywhere.*

6. SPARE THE WILDFLOWERS. It is sometimes hard to resist plucking the beautiful wildflowers covering our landscapes at certain seasons of the year until you remember that selfishness of a few thousand, or a few hundred thousand, people can soon destroy the breath-taking picture which Nature has spread over the hills and fields. Stop and think that the flowers which you pick will be just a mass of wilted blossoms by the time you get them home, their bright colors faded and their perfume gone. Realize that outdoor manners demand that you enjoy them as Nature intended.

7. DRIVE CAREFULLY. When behind the steering wheel on the way to and from work or play, remember that yours is not the only car on the road. Driving an automobile is a job of work and if you, as the engineer, should forget this fact for a single moment, your pleasure can be turned into tragedy. You must be eternally alert to the movement of *four vehicles*—the one in front; the one behind; your own; and the one you do not see. You will watch out for blind curves and blind intersections. If you are driving slowly so that your passengers may enjoy the scenery—while you are watching the road—keep well to the right and avoid holding up long lines of cars, the drivers of which may be bent on urgent business. DON'T SPEED. On some roads you may be able to do fifty-five in safety; on others, twenty-five miles per hour may be a dangerous pace. DRIVE YOUR ROAD. Remember that the driver behind can't read your mind. Therefore, make full use of the left hand and arm which God gave you to signal SLOW or STOP, RIGHT or LEFT. Pay attention to the signs. They are placed there for your guidance and protection. *Practice good manners on the road—be a courteous driver.* The other fellow pays license fees too, you know.

8. HEED THE MAN WITH THE BADGE. Whether he is a forest ranger, a park ranger or a traffic officer, he is your friend and is paid by you and millions of other Americans to make outdoor recreation safer and more enjoyable. Listen to the advice of the man in uniform. He knows what's best. That's what he's paid for. Always there will be some people who will violate some or all of the rules for good manners in the outdoors. You, as an outdoor lover, WILL NOT.

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SHADE TREES FOR LOWER HOUSE TEMPERATURES

By FRED R. JOHNSON

DENSE shade trees can reduce room temperatures in houses as much as 20 degrees. This and other facts were brought out in a study conducted by the California Agricultural Experiment station and was reported in the June, 1956 Journal of Forestry by Robert B. Deering, assistant professor of landscape management of the University of California.

The studies showed that the cooling influence of well placed shade trees can materially affect both exterior and interior living areas even in hot regions where temperatures reach above 100 degrees Fahrenheit.

The tests were carried out using a 20x8 foot house trailer which was moved to three sites: (A) a bare, dry ground area devoid of vegetation and shade; (B) east of and adjacent to a large grove of eucalyptus trees which provided afternoon shade only; and (C) the trailer was placed beneath a group of large fig trees which completely covered it; there was good turf around the trailer on sites B and C. Wind temperature and humidity readings were taken.

In addition to the lower temperatures in the shaded trailer, the morning temperature reached 75 degrees 3½ hours later than when the trailer was located in the sun and it cooled down to 75 degrees in the afternoon 2¾ hours earlier than in the open.

The tests indicated that the best shade tree planting for living would be high branching deciduous trees relatively close to the house on the east and south because vertical shade control is necessary during the morning and afternoon. Low branching trees, planted on the west and northwest would provide shade in late afternoon. Evergreens might be used for the west and northwest planting. Personally I prefer a good sized deciduous tree for protection from hot afternoon sun.

Of course these findings apply only to small wood houses, but they have some bearing on masonry or stone construction. Heavy materials take longer to warm up and consequently longer to cool off.

Other interesting points were reported from the study which seems to have points of similarity to conditions in many of the present-day housing developments. Some of these houses have no shade and, unless well insulated, must have been uncomfortably warm during the past several summers of above normal temperatures.

In older sections of Denver some home owners, discouraged by the high maintenance cost of trees such as cottonwoods, Chinese elms, and others, have had them removed. It would be interesting to check temperatures of such treeless homes with adjacent well-shaded ones.

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BLUE STAR MEMORIAL HIGHWAYS

By MRS. FRANK EDWARD NEAL

COLORADO was the first state to formulate and undertake, under the sponsorship of the National Council of State Garden Clubs, Inc., a Blue Star Memorial Highway project. 20,000 miles of highways in the United States have now been so named and dedicated. Mrs. Frank Edward Neal has been the National Blue Star chairman for a number of years and she and her husband have done most of the work on the Colorado system themselves.

The fundamental purpose of the Blue Star Memorial project was clear cut but manifold. Basically it was to be a positive demonstration of roadside beautification and an example, for all to see, of what the garden clubs have been advocating for many years. It was to be a positive educational demonstration against the desecration of our roadsides with billboards.

When the project was invisaged and launched during World War II, contributors to the project considered it a particularly suitable memorial for their sons and daughters who were then fighting on foreign shores. They could think of no more fitting tribute than the actual protection and beautification of the land for which Americans were fighting and dying. They therefore chose the name Blue Star for the blue star on the service flag.

The first section to be dedicated was a six mile stretch of highway between Mountainside and North Plainfield on Route 29, one of the busiest highways in the state of New Jersey. When the project was first considered in 1944, it had a great potential for educating the public toward higher standards of roadside development. One of the important aspects of this development was the memorialization by the New Jersey legislature in 1945 in a joint resolution to "forever dedicate this part of Route 29 as Blue Star Drive." On January 22, 1945 the legislators themselves made a contribution to this Blue Star Drive so that large and handsome dogwood trees could be planted in memory of their members on the Honor Roll. It was not long after this first legislation was passed that further legislation was enacted permitting the state highway department to purchase rights of way on either side of the Blue Star Memorial Drive for landscaping purposes and to keep off bill boards.

In 1945 a National Blue Star Memorial Highway from coast to coast was projected by Highway Commissioner Spencer Miller, Jr., of New Jersey. It met with wide favor. By this time most states were included.

Adopted in 1947, the design of the markers for these highways was a gift of Mrs. Frederic R. Kellogg, of Morristown, New Jersey, Honorary President of the National Council of State Garden Clubs, Inc. Texas bought the first one and Tennessee was first to dedicate a marker.

Thousands of seals bearing the Blue Star message of safety and beauty were distributed. The American Association of Nurserymen offered to make a planting design for around the Blue Star marker. This design, offered in pleasing booklet form, is a splendid expression of goodwill.

This memorial project of the National Council of State Garden Clubs, Inc., will be a continuing one and should inspire unheralded loyalty and devotion.



Blue Star Memorial Highway System consisting of one east-west highway and seven north-south highways.

NEW PARK SITES BY ANNEXATION

By E. W. WALLACE, *Director Parks Planning & Design*

DENVER has reached out and taken in 51 annexations since 1941 adding 15.3 square miles and increasing its population by more than 150,000 people. This means spreading our parks and recreation facilities that much thinner. The same thing holds for schools, police and fire protection, water, sanitation, etc. Fortunately for schools, the educational needs of our children come first in the eyes of most parents: the third bond issue since 1948 has just been approved. This, of course, aids our recreation program in that playgrounds and playfields are supplied to many needy areas. Parks are less well off. Without them playgrounds are not very attractive for family participation. It should be said here that school and park planning are done jointly in many instances with very satisfactory results and a substantial saving to the taxpayer.

A drive through some of the earlier annexations reveals extremely crowded conditions where the developer has built just as many dividend-paying houses as the zoning law would permit—where back yards offer no room for play and a boy walks a mile to play ball. There isn't an open lawn, or shady spot within walking distance for most young mothers to take their youngsters when the work is done and the older kids are off at school.

Many of us were brought up around Cheesman Park or some other neighborhood park provided for us. It's a little difficult to visualize growing up without a place to play—some new area to explore. Are we going to deprive the kids of today this kind of childhood?

The City Planning office and City Council asked themselves this question and decided to do something about it. As a result, all annexation together with pertinent data, are now submitted to the Parks and Recreation Department to determine which facilities will be required for final annexation. Checking against a master parks and recreation plan, size and location of new park sites are determined and referred to the annexor for guidance in subdividing for development.

An ordinance passed by Council requires that a public site land donation of eight percent be required for each area annexed. This donation must be in the form of land, except where the area to be annexed is entirely improved or where the public sites offered for donation are not acceptable; in such case an equivalent cash payment may be accepted.

This public site land donation requirement is defined as eight per cent of the net area excluding public rights-of-way to be annexed. The equivalent cash valuation, when acceptable, is based upon an appraisal by a competent independent appraiser selected by the City.

This new approach has netted Denver about 125 acres of park and school land in the past two years. There have been 15 annexations in southeast Denver alone, totaling almost 1500 acres. The City has procured about 84 acres of public land in this sector. About 65 of these have been carefully coordinated with the Master Parks plan which calls for a large park in the vicinity of Monaco Boulevard and Cherry Creek. The land extends west to South Holly Street where the new bridge will make it

accessible to areas on both sides of the creek. Adjoining lands will be purchased making this one of the largest developments in the southeast section of the city.

A similar site is being acquired by annexation and purchase in the Bear Creek area just east of Sheridan Boulevard. There are now 10,000 homes in the southwest Denver area south of West Exposition Avenue. Most of them are on lots that were farms and open fields not long ago. Plans for this area call for about four houses a day to be completed during 1956. Two annexations there in 1954 and 1955 totaled 1253 acres. Two elementary sites and one junior high school site have been donated and a 27-acre park at West Evans and Tennyson, in addition to the park land at Bear Creek.

As soon as these sites are determined, a preliminary development plan is made even though funds may not be available for immediate construction. Thus, a good many dollars may be saved by obtaining free soil, if needed, from new street excavations in the area. Or perhaps desired lakes or other cuts needed in the development of the park may furnish soil to contractors needing fill material for street or subdivision grading.

We feel this is a great step forward in building Denver's future. In time the City's Planning Department will receive due credit for the courage and foresight in tackling this problem.

SHADE AND STREET TREE COMMITTEE GAINS MOMENTUM

By PATRICK J. GALLAVAN

FROM a slow but sincere beginning, this committee has grown from a few interested persons to 20 or more enthusiastic members. All realize that much of our city's beauty is due to its trees and that unless steps are taken to remedy some of the factors affecting them, we stand to lose this heritage. Through series of round table discussions they have outlined their objectives and are now selecting sub-committees to work on them.

The objectives are: 1. To work in cooperation with the city and its agencies in studying problems (where trees are involved) in street widening projects. 2. To review the older sections of the city and suggest plans for redeveloping the right kind of tree planting for these areas. 3. To study the new subdivisions and suggest plans for the proper planting of trees in these areas. 4. To study the effects of the current drought and its effects on the trees in the Denver area. 5. To instigate a public education program as it relates to the above objectives.

To further acquaint themselves with some of these problems, members of the committee are planning a bus tour of the city August 4. This tour will be conducted by George Stadler, the city forester of Denver, who will point out many of the problems the city is faced with in dealing with street trees.

FLEISCHER'S HOUSE OF FLOWERS

By Lillie G. Fleischer



P. GERHARD FLEISCHER, pioneer florist of Pueblo, was affectionately known to friends and acquaintances as "G. F." Few knew that he was named for the great hymn writer Paul Gerhard, a fitting man for the son of a Lutheran minister to be named after. "G. F." had three brothers. Gotthold, the oldest, served as superintendent of a gun factory in Kabul, Afghanistan where he became a favorite of the ruling Amir. This incurred the jealousy of eight natives who assassinated him. Later these men were caught and tied to a canon for execution. The second brother, Arthur died soon after coming to Pueblo, and Martin, the third brother died shortly after his graduation from the University of Leipzig.

Gerhard attended the elementary and high school of his native Saxony and then entered the Horticulture Academy at Roetha-Leipzig on April 6, 1880, graduating three years later. He spent four years gaining experience in his chosen field and served in the German army from 1887 to 1888 supervising the landscaping of the celebrated military park at Friedrichsfeld.

He embarked for America in the year 1890, received his naturalization papers May 4, 1897 from county judge John H. Mitchell and shortly afterwards became head gardener for M. D. Thatcher, president of the First National Bank of Pueblo. On October 6, 1893 when Gerhard married Marie Zarn, who had come from Germany two years before, Mr. Thatcher lent them his own carriage and horses.

Two years later Gerhard started a business of his own on lots still occupied today by the family business. One of the original greenhouses still stands but there has been an increase from the original 2000 feet under glass to 37,000 feet. Fleischer opened the first flower shop in Pueblo a year later at 4th and Main but after the disasterous flood of June 3, 1921 he moved it to a new location opposite the Post Office.

Most of the parks in the city were laid out by him and a major portion of the planting was his work. In 1904 he landscaped City Park which at the time was largely an orchard. The same year the city gave him a contract for the extension of Mineral Palace Park and Fairmount and Irving Place Parks. He also landscaped Bessemer and East Pueblo Parks and planted the Court House lawn.

For many years he served as County Horticulturist specializing in carnations. Gerhard grew as many as 15,000 at a time, as well as 40,000 bedding plants. His son Waldemar who had spent several years in the

East studying rose culture was put in charge of the 6,000 roses grown in Pueblo for the first time. And, of course, other cut flowers were grown in their seasons. In 1918 he grew 100,000 tomato plants for a canning factory at Crowley. In addition, he grew many other food plants to aid in food conservation during World War I.

As he disposed of his nursery stock, the lots were sold for sites for new homes. This decreased his acreage from the former 36 city lots to the present 26.

"G. F." was a life member of the BPOE of Pueblo and the American Florists Association.

He died in 1942 survived by his wife until May, 1956. But Fleischer's House of Flowers continues on under the direction of his son Waldemar at the same old address of 943 Claremont Avenue.

Mrs. Lillie G. Fleischer, author of the above article and one of our new contributors, is first vice president of the Pueblo branch of the National League of American Pen Women and a member of both the Southside and Airlane Garden Clubs. Through her efforts, Red-hot Poker (Tritoma), *has been accepted as the official city flower for Pueblo because the color suggests the hearth fires of C. F. & I. (the principal industry of the city) and the common name, Red-hot Poker, a heated branding iron, symbol of the old west. The flower is being planted at all the major entrances to Pueblo and Mrs. Fleischer is making headway in promoting a fall flower festival in which Red-hot Poker would be the major display. Her other interest—writing—has had far flung results. After a visit to the Municipal Garden of Norfolk, Virginia, Mrs. Fleischer wrote a poem about it which is now displayed at the new entrance to "Norfolk's Garden of Eternity." Another of her poems has been set to music by A. G. Cochenberger of Pueblo. Her husband, Waldemar Fleischer, has recently been appointed to the Association's Board of Trustees.*

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JUNIOR GREEN THUMB

OUT OF A COCONUT SHELL

WRENS darted around the odd little coconut shell house. Wings whirred fast as plane propellors. Watching was a middle-sized boy as still as the log chair on which he sat.

Then he noticed me standing at the roadside, watching also. "Good morning," I said, "What a lovely garden!"

"Hullo! Would you like to come in for a closer look?"

So I went into the garden and sat on the log chair. "My Dad made that chair from a red wood log," explained my friend.

"Did he also make the wren house?"

"No, I made that. I made the weather vane, too," he remarked, pointing to an arrow marker set in the middle of a geranium bed.

"Are you also a gardener?"

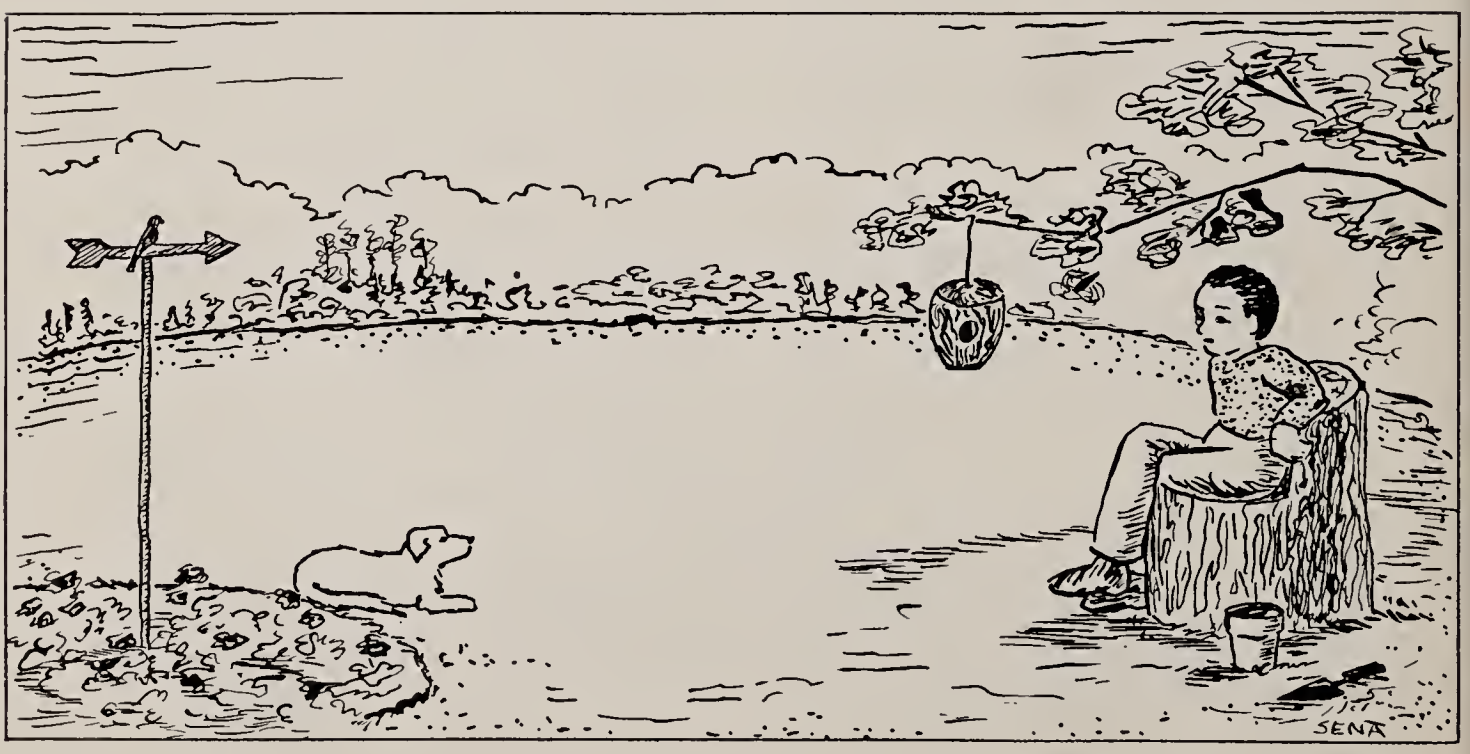
"I help. In the fall I gather seeds and put them in a cabinet which I made from match boxes. Would you like to see it?"

I nodded, and he fetched the seed cabinet from the garage. He had cemented penny match boxes together. Wallpaper was cemented to the back, top, and sides of the cabinet for strength. Two-pronged paper fasteners pushed through the front of each box were the handles. Tiny labels glued below the handles told which seeds were in each drawer.

You, too, can easily make this seed cabinet and start collecting seeds this fall.

Get a coconut and make a coconut shell wren house. Cut off the top and scoop out the meat. Drill a 7/8" hole in the side of the shell. Holes are drilled near the top for three wires, which are twisted together and slipped through a hole drilled through the top. Hang your wren house from a low tree branch.

To build a weather vane, you'll need a board, 1"x4"x12". Rule 1"



squares on the board. Draw an arrow as shown and cut out with a coping saw. Sandpaper both sides and all edges. Paint with enamel.

Balance the arrow on your finger to find the center of balance. Then drill a hole at this point with a 1/8" twist drill.

Sharpen one end of a broom stick so it can be pounded into the ground. Paint the broom stick. When dry, the broom stick can be driven into the ground in the garden. Select a nail which fits loosely into the hole in the arrow. Put it through the arrow and drive into the end of the broom stick. And there you have your weather vane all finished.

Soon I shall visit the wren house boy again. If he builds anything new, I shall tell you just how you can build it, too.





Fig. 1 — Match box seed cabinet and detail view showing handle attached to drawer.



Fig. 2—Coconut Shell Wren House.

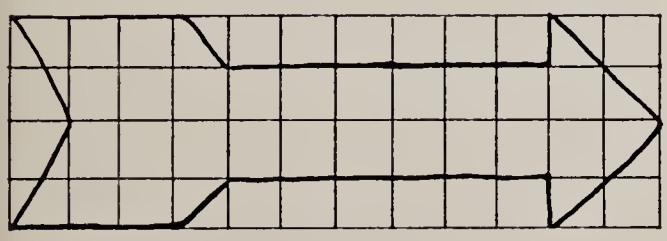
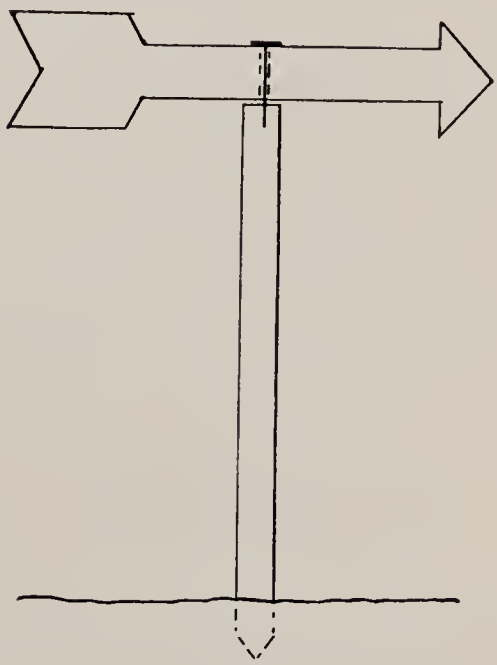


Fig. 3—Detail of weather vane pointer. At right, illustration showing its attachment to a stake.



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MEYER ZOYSIA GRASS (Z-52)

By GEORGE BEACH, *Colorado A & M Horticulture Dept.*

MEYER Z-52 zoysia grass is a turf grass which has received considerable publicity of late. Many Coloradoans are asking "What is it? Where did it come from? Will it grow in Colorado and survive in the heat of summer with little water? Will it crowd out weeds and crabgrass? Will it make a good lawn? How much does it cost?"

Meyer zoysia (the Z-52 was its number when it was selected from among other strains of a species from the Far East) is best adapted to long hot summers. Summers are neither long nor very hot in "cool Colorado." It was introduced by the USDA and the US Golf Association Greens Section about five years ago.

Colorado A & M planted it experimentally at Fort Collins two years ago to learn (1) if it would survive our winters, (2) if it would crowd out bluegrass and (3) how it compares with bluegrass as a lawn.

It has survived two winters without injury at Fort Collins. It does not crowd out bluegrass (nor crabgrass—worse luck!). It makes its best growth in July and August. It turns brown and dead-looking with the first frost in fall while bluegrass grows well in fall and is green until Thanksgiving. Zoysia also remains brown months later in spring than does bluegrass.

Zoysia requires irrigation in Colorado to keep it growing in summer. Even bluegrass can survive long periods without irrigation but, of course, does not make a good looking lawn with such treatment.

Meyer zoysia must be planted by "sprigging" or "plugging"—that is, plants are used instead of seed. The seed of Meyer zoysia is unavailable. If plugs two inches across are planted as close as a foot apart each way, it will take several years, in Colorado, to get a complete cover from the spread of runners.

This grass can be grown rapidly in the long warm seasons of the South and it is being offered for sale at around $5.00 per square foot. Hence, establishing a lawn of Meyer zoysia is laborious, would take many years, and is time-consuming and expensive in Colorado. The fact that, for a few weeks in mid-summer it can "take" the heat better than can bluegrass is small advantage compared with the excellent performance Coloradoans can get, with reasonable maintenance, from bluegrass which is naturally adapted to our long cool seasons.

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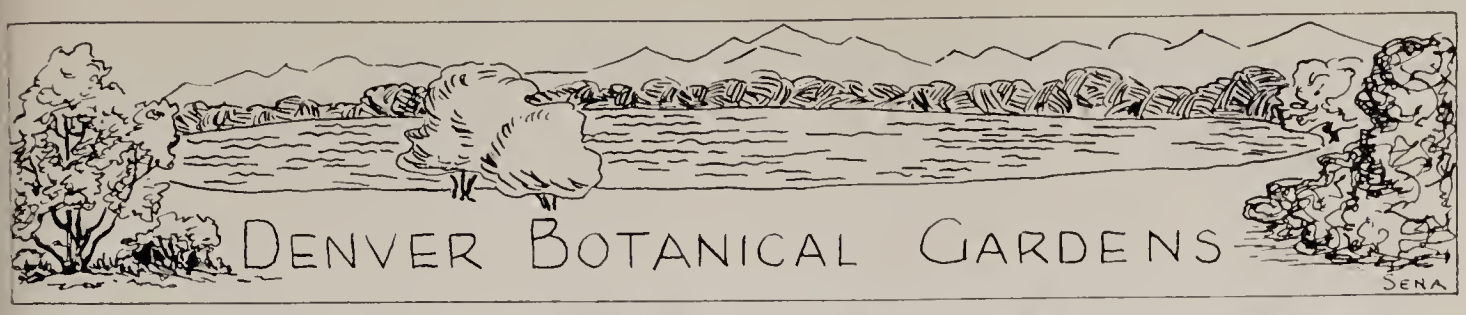
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CONIFERS AT THE BOTANICAL GARDEN

By ROBERT L. WOERNER, *Botanical Garden Director*

ONE of the most important collections at the Botanical Garden is that of the conifers in the Glenmore Pinetum. Conifers are woody plants of the pine family and its allies, the ginkgo and yew families. The designation conifer includes some plants which do not bear true cones. The ginkgo fruit is plum-like, that of the yew is a small nut surrounded by a cup-shaped, fleshy structure, while juniper "berries" are familiar to everyone. Yet these plants have similar anatomical structure and evolutionary history. Technically, they are gymnosperms—plants in which the infertile seeds are not enclosed in an ovary.

Often they are called evergreens, for the majority of the conifers are evergreen trees and shrubs. Ginkgo, larch, golden larch, baldcypress, and dawnredwood are the exceptions, for they are deciduous and shed their needles or leaves. Other evergreens are not conifers at all and come from families which may be quite remote from those of the conifers. These are usually called the broadleaved evergreens and include plants such as rhododendron, oregongrape, boxwood and kinnikinnick.

Of the 35 genera of conifers known to be in cultivation in the United States or Canada, 14 are represented in the Glenmore Pinetum. This number includes all of those which are known to be hardy in this climatic zone. Less than half a dozen remain to be tried in Denver, and their chances for survival are doubtful. An enumeration of the genera in the pinetum and a few clues to their identification will be a help in distinguishing the various members of the conifer group.

GINKGOACEAE— GINKGO FAMILY

Ginkgo, represented by *Ginkgo biloba,* Maidenhair-Tree, would seldom be taken for a conifer by most gardeners, since its leaves are deciduous and fan-shaped with a notch dividing the fan into two lobes. However, it is a resinous tree and a gymnosperm. Although there are several varieties of the species, *Ginkgo biloba* is the only existing representative of the genus and the family to which it belongs.

TAXACEAE—YEW FAMILY

Taxus or Yew is represented at the Botanical Garden by several species and varieties on the north side of the museum. The leaves or needles of the yews are in two rows on the twigs. They are dark green above and pale green beneath. The red, cup-like berries enclosing the seed are quite distinctive and quickly identify the genus.

TAXODIACEAE—TAXODIUM FAMILY

(Members of this and the Cypress Family were formerly grouped with the Pine Family).

Taxodium represented by the only species hardy here, *Taxodium distichum,* Baldcypress, is one of the genera of deciduous conifers. The

leaves are alternate and two ranked. The round, woody cone is about 1 inch in diameter.

Metasequoia represented by the only known species *M. glyptostroboides,* Dawnredwood, is another deciduous type. Its flat, two-ranked, needles are opposite in contrast to the *Taxodium.* Its growth is very rapid where conditions are favorable. It will gain as much as two or three feet in height in a single season.

CUPRESSACEAE—CYPRESS FAMILY

Chamaecyparis, Falsecypress, has opposite scale-like leaves which occur in pairs at right angles to each other on the twig. The woody, round cones distinguish this genus from the *Thujas.*

Cupressocyparis, a generic hybrid between *Cupressus* and *Chamaecyparis* is represented by the known cross *Cupressocyparis Leylandii.* This plant is similar to one of its parents, the Nootka Falsecypress, *Chamaecyparis nootkatensis,* but it has larger cones with 5 seeds to each cone scale.

Thuja, Arborvitae, is also planted on the north side of the museum for protection from the winter sun. The arborvitees (often called "cedars") have scale-like leaves in opposite pairs similar to the falsecypress species. They can be distinguished by their cones which are ovoid with flattened scales.

Juniperus. Juniper, is a genus containing some of the most familiar ornamentals. The juvenile leaves occur in 3's with whitish bands on the upper surface. Leaves on older growth are scale-like and opposite. The fleshy cones or "berries" are distinctive and easily set the genus apart. More than 75 species and varieties of junipers are located on the mound south of the museum.

PINACEAE—PINE FAMILY

Abies, Fir, has a characteristic circular leaf scar where the needle-like leaf is attached to the twig. Leaves appear to be in 2 rows because of a twist in the base of the leaf which brings the needles into line.

Cedrus, Cedar, is represented by the Cedar-of-Lebanon, *Cedrus libani.* This plant is derived from seed gathered in the coldest part of the natural range of the species. It is being grown here on an experimental basis. One of the characteristics of this plant is that its branches do not radiate from the trunk at one point in a "whorl" as do many other conifers. The 4-sided, stiff needles are alternate on new shoots and in fascicles or "bundles" on spurs.

Larix, Larch, is a deciduous conifer. Its needles are arranged in a spiral on lead shoots or in clusters on short spurs on older wood. The larches turn a bright yellow in the fall before they shed their needles.

Picea, Spruce, is identified by the stiff needles which occur on peg-like stalks. The needles are usually four-sided and roll easily when rubbed between two fingers. The native Colorado Spruce is one of the most common ornamentals in the area.

Pinus, Pine, is distinguished by its secondary leaves or needles which occur in bundles of 2 to 5. The needles are usually longer than those of the other conifers and are half circular or pie-shaped in cross-section. (The needles in each bundle fit together to make a full circle in cross-section).

Pseudotsuga, Douglasfir, has 2 ranked, flattened needles with a white band on either side of the prominent midrib beneath. The douglasfirs have pointed buds in contrast to the blunt resinous buds of the true firs.

Of the 14 genera listed above, 12 have been used extensively in ornamental horticulture. Conifers serve many purposes in landscaping. They include a variety of forms and shapes

which are excellent "building blocks" for the landscape architect.

Their varying needs in regard to soil types, light, and moisture increase the flexibility of a planting of conifers. The pines are adaptable to loose sandy soils. In general, spruces like a moist and cool situation, but Norway, Colorado, and White Spruces will endure drought. Similarly, the White Fir and Douglasfir have proven tolerant of hot dry conditions.

For shady areas, the yews and firs do best, followed by spruces, arborvitae, and junipers. Some protection from the winter sun is essential for the survival of yews, falsecypress, and arborvitae in this climate.

Conifers provide us with most of the lumber and wood products that go into our homes, with naval stores, and with the paper products we use constantly. This wonderfully productive plant group gives us the additional ornamental value which we have mentioned. They are worth knowing!

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OUT-OF-STATE

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The New Jersey Medical Society advises middle-aged amateur gardeners to take it easy. The society says "The aim is to dig flower beds, not graves; the result should be a summer of flower pleasure, not an eternity of repose."

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YOUR GARDEN IN AUGUST

By VELLA HOOD CONRAD

AUGUST is a lazy month in the garden. Weather is usually hot, the garden looks a little ragged and most people would rather take off to the hills. There are things, however, that a good gardener will do this month. Madonna lilies can be transplanted now. Do not plant them too deeply. These are planted twice the depth of the size of the bulb.

Bleeding heart (old fashioned) can be transplanted now as it is dormant. Oriental poppies are also in this category. They make a gorgeous display in May combined with iris. I have the pink orientals with blue and yellow iris. (Be sure to watch for the September issue of The Green Thumb with its article on oriental poppies.)

If you haven't finished dividing and planting bearded iris, start now. There are so many lovely ones. I find by planting in groups of not less than 3 rhizomes of one color (and I really prefer 6 of one color), I get better effects. I like to use groups of light colors to 1 striking dark color. Repeat the pattern in large plantings.

This year's ten favorites are as follows:

1. Truly yours—yellow
2. Ola Kala—deep yellow
3. Mary Randall—rose pink
4. Argus Pheasant
5. New Snow
6. Blue Rhythm—blue
7. Elmohr—violet
8. Chivalry—blue
9. Pierre Menard—blue
10. Happy Birthday—pink

The iris of the year, chosen by the Iris Growers of America are: Solid Mahogany, Extravaganza, Cascade, Splendor. All these are top quality and are inexpensively priced.

In August, water deeply and use mulches where you can. This is a good time to carry a note book and write down changes you wish to make, such as color combinations, new garden furniture, and all the things you will want next year. These things can slip your mind unless you write them down.

Mildew becomes a problem in the rose garden now. Preventive spray, using either sulfur or one of the Karathanes every 10 days and watching temperatures (sprays burn plants at 90 degrees or over) is sound practice.

Red spider can be controlled with malathion or one of the miticides. Have you noticed the coolness and quietness that prevails in a garden where white has been chosen to predominate. Watch for some of these clever designs as you go on the Look and Learn Visits.

Looking ahead to next winter when you will want potted plants in the house, cuttings of such soft wood plants as geranium, coeus and begonia can be rooted in late summer. Use a sand box and keep it moist but not soaked. Transplant after the roots form, in about six weeks.



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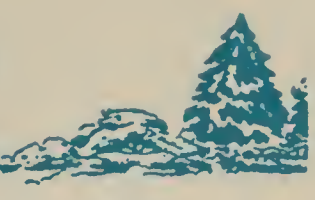
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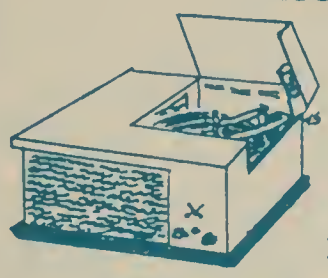
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The Green Thumb

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CALENDAR OF EVENTS

September 10—Botany Club meets the second Monday of each month. 8:00 P. M. Horticulture House.

September 12—Organic Garden Club meets the second Wednesday of each month. 8:00 P. M. Horticulture House.

September 7 & 8—Harvest Festival, Arvada, Colo.

October 1 — Fun With Flowers first Monday of each month, Garden Center, W. Alameda Avenue and Kalamath Street. 10:00 A. M.

NOTICE—THE NEXT ISSUE OF THE GREEN THUMB WILL BE A COMBINED ISSUE OCTOBER-NOVEMBER. IT WILL BE IN THE MAIL THE 20TH OF OCTOBER.

The Calendar of Events has been a standard feature in the Green Thumb for many years. Its job is to keep our membership informed of our activities as well as other functions outside our organization in which they might be interested. Occasionally we miss one of these out side programs, because we were not aware of it, or notice of it arrived too late for publication. To remedy this situation we need your help. If you know of some event which you think would interest our members such as, a flower show, or a lecture on gardening, that is open to the public, please call Mrs. Rose Hughes GL 5-5752. Such material should be in to Mrs. Hughes by the 10th of the month preceding the issue in which the notice will appear.

PATRICK J. GALLAVAN.....*Editor* MRS. HELEN FOWLER.....*Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. GILBERT SAUER, *Custodians*

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION
A non-profit, privately financed Association.
1355 Bannock Street • Denver 4, Colorado • TAbor 5-3410

ACTIVE PARTICIPATION

OCCASIONALLY the question arises, just how active are the members of our association? It is not an easy question to answer, but when one considers it carefully the answer is surprising. Looking at the two major functions, the plant auction and the garden tours, we find that more than 200 members contributed of their time to make them a success. Then the committees, Executive, House, Library, Herbarium, Editorial, Street and Shadetree, Plant auction, Garden Tours, Membership, Parks and Roadside Development, call upon the time and energy of another 100 or so of our members. And we should not forget the many people who have contributed stories to the Green Thumb and those who individually have solicited memberships. All told, approximately 20 per cent of our membership has actively participated in the endeavors of the association this year. While this is probably a healthy percentage for an organization such as ours, we would like to encourage all of our members to join in our activities. If you have not been approached by any of the mentioned committees, but would like to work on one of them, just call Horticulture House TA 5-3410 and we will gladly pass the information on to the committee chairman.

SHADE TREE COMMITTEE TOUR

By FRED R. JOHNSON

PROBLEMS connected with Denver shade trees, as outlined in Pat Gallavan's article in the August Green Thumb, were studied in a tour of Denver on August 4. A group of nineteen started from the Natural History Museum at 8:30 a.m. in a sight-seeing bus under the leadership of David Abbott and George Stadler of the Denver Parks and Recreation Department.

Mr. Abbott first showed us how the extension of Josephine street north from Colfax will affect trees, East High School's athletic field, and City Park. Then we looked at the 32nd Avenue four lane parkway which has a 25 foot strip along its south side offering opportunity for some sort of ornamental planting.

The type of tree planting, or the lack of it, in north Park Hill where several thousand houses have been built in the last ten years, was next reviewed.

Then a swing was taken into an older section of the city near Manual Training High School, where George Stadler explained what is happening to the trees there.

Next the Speer Boulevard, Downing, Corona, 1st Avenue traffic and tree problems were studied.

The group included Mrs. J. Churchill Owen, Mrs. Charlotte Barbour, Miss Melanie Brown of Horticulture House, Mrs. Stoddard, president of the Denver City Federation of Women's Clubs, Mrs. Buckbee representing the Colorado Federation of Garden Clubs, Arnold E. Perreten of the Public Service Company of Colorado, Dr. J. H. Belknap, M. Walter Pesman, Henry Gestefield, Jacob V. Schaetzel, Myron W. Thompson, Earl Sinnamon, Robert Woerner, Mr. Kirch of Harmon O'Donnel, Henninger Associates, Henry Toll who had as his guest Mrs. James Phinney Baxter, wife of the President of Williams College, and your reporter, Fred R. Johnson.

OUT OF THE FRYING PAN



Henry Gestefield, recently retired Grounds Superintendent at Fitzsimons, has now gone into business for himself as a landscape consultant —and a well qualified one he is— having spent 11 years at Fitzsimons, 6 years with La Junta Air Field and the Agricultural Department, and 21 years in the landscape, nursery, and greenhouse business before the depression.

Mr. Gestefield was born in Germany, immigrating to this country in 1908, bringing with him 3 years of study in Bremen and Hamburg followed by invaluable experience with the Botanical Garden in Hamburg. Two years after his arrival in New York he headed west to Colorado where he has since specialized in high altitude horticulture. The Colorado Forestry and Horticulture Association is proud to have Henry as a member of long standing and wishes him the very best in his new enterprise. The association also hopes he'll continue sending articles from time to time for The Green Thumb.

YOU CAN HELP

YES, you can help keep the cause of conservation green. We were fortunate in having the Post Office Department issue three beautiful conservation stamps this year. The Wild Turkey stamp was released at Fond-du-Lac, Wisconsin on May 5th. The "first day" of the Antelope stamp took place on June 22nd at Gunnison, Colorado. The date and place for the release of the third stamp, the King Salmon, will be announced soon.

We urge everyone interested in the conservation of our natural resources to buy and use these stamps generously. Why not buy enough now for all your Christmas mailings. They would be a fine decoration on those Christmas envelopes! If we want more stamps picturing our wildlife next year, it is up to us to show our Post Office Department that we *like* and *use* them. Let's keep them coming!

N.B. Branch postal offices do not always stock commemorative stamps but they may be obtained at the main Post Office. Conservation stamps are worth the trouble it may take to get them.

Mrs. E. R. Kalmbach

SEASONAL SUGGESTIONS

By HENRY GESTEFIELD

FALL PLANTING AND TRANSPLANTING

Lawns: Latter part of August, September, and first part of October is the best time to plant or re-seed your lawn areas. Fall planted lawns must be watched for needed winter watering in dry years but fall planted lawns usually have less weed problems, provided clean seeds have been obtained from reliable seed dealers. There is no need to plant more than ½ pound per 100 square feet for two much seed causes crowded plant conditions.

TRANSPLANTING AND DIVIDING PERENNIALS

Divide and replant in late August and September the following plants: iris, hemerocallis, peonies, Alaska and Shasta daisies, sweet williams, pinks, bleeding heart, lilies, and Jerusalem pinks. Later in September and forepart of October: *Anchusa italika,* hardy asters, delphinium, golden glow, perennial sweet peas, and phlox.

Transplant but don't divide crowns or roots of baby breath, statice, red hot poker, columbines, centaura, and phlox. Spring transplanting is better for achillea, aconitum, pyrethrum, chrysanthemum, Iceland poppies, scabiosa, stokesia, and veronica.

Now is the time to visit your local nurserymen and see the nursery stock in bloom and foliage. Select and order your fall perennials and evergreens, and reserve your trees and shrubs for spring planting. Trees and shrubs can better be planted in early spring as our winter climate is much dryer than in other areas and sudden temperature changes occur causing the trees to dry up before feeder roots are started. September is bulb planting time. See The Green Thumb issue dated September 1954 with the article by Evelyn Miles Johnson and "Its Tulip Planting Time" by Herb Gundell. See also the September 1955 issue entirely devoted to bulbs.

Don't rob our roadside mountain highways of evergreens. 99% will surely die when inexperienced people bring them down from the mountains. They are most likely dug or pulled from shady places and the roots will dry up before getting them home. And they cannot withstand our sunny dry weather.

If you have unknowingly ordered trees and shrubs from outside of Colorado and they are shipped to you this fall, don't plant them right away. Instead, heel them in a trench, lean the tops to the south, and cover the roots with soil. Then fill the trench with water, mulch around the trees, and shade the tops. Plant in spring.

Trade with local nurseries and seedsmen. They know what thrives here and have in their nurseries the planting materials that can grow here — for Colorado horticulture is different!

MARSHALL NURSERIES

Better Built Trees—Landscaping with Personality

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ARRANGEMENT OF THE MONTH

By Mr. and Mrs. Ray Turnure

White gladioli form the pyramid with a Dalmore pink dahlia as the base of the triangle. Iris leaves are used in fillers in the dark green porcelain container. The arrangement is cool and restful.

HOW TO USE FALL COLOR IN THE GARDEN

By M. WALTER PESMAN

AFTER finishing any landscape planting plan it is essential to make a special check-up on fall color. A garden or park may have been perfectly satisfactory during spring and summer, yet, at the very time that nature "lets itself go" in fall, may fail to come up to legitimate expectation.

This is particularly true for schoolgrounds. When a child comes back to school in September after a long and joyous vacation, what if he finds nothing but drab and unexciting things around him? On the other hand, if there are exhilarating color spots on the schoolgrounds, it may help to make "back to school" a bit more attractive. I am thinking for instance, of the glorious, luminous color of *Crataegus macrocantha* which is such a joy every fall at the main entrance of East high school.

A few simple rules-of-thumb are easy to follow:

1. Fall color should be scattered through a planting in apparently haphazard fashion although in reality it must be carefully thought-out with high spots in important places. Color, in other words, should carry the eye to the focal spots where the garden is particularly lovely. That is sometimes called, following the principle of *sequence,* or *guiding the attention.*

2. Even the most gorgeous color can be surfeiting if it fails to have a foil. Thus, aspen color is most photogenic where it is contrasted with dark-green evergreens. The mind reacts to change and becomes weary of sameness, even if that sameness is spectacular to begin with. (In the same way that too much decoration is tiresome).

So, in the garden, be sure to have some good greens to bring out the crimson and gold of sumac, ginnala maple, and red oak.

Common lilac keeps its green leaves a long time; so does buckthorn. Coniferous evergreens are, of course, always a good background for fall color, as well as for colorful winter branches and early spring blossoms. Our Oregon grape has a similar function in early fall, then is apt to lose its glossy green.

3. Then there are a few shrubs that swear at each other in the fall. Always to be watched carefully as to location is the Winged Euonymus (*Euonymus alatus*). It is almost a bloodred and it can either "make" a fall scene or create a most unpleasant discord with other reds. Scarlet and crimson may kill each other if not separated by large masses of green or yellow.

Golden yellow itself is generally perfectly safe: "Yellow does not swear, neither does it sin, and yet, Solomon in all his glory—" —it could have been said about aspengold, just as well, couldn't it?

4. The more intense a color is, the less mass of it is needed. That is one reason why strong scarlets and crimsons had better be used in small groups close to the lawn, whereas yellows look particularly well at greater distances and especially when seen against the blue sky. (Check on your color photos and see how well aspen pictures show up against the clear azure sky here in Colorado.)

For the selection of particular trees and shurbs for fall color see the

article "Some Fall Color Notes" by Edgar A. Johnson on page 10.

In spite of the best laid plans, you may find that in an odd year discords may slip into the garden. If this is due to an off season, there is little harm done. If it is due to wrong placement of shrubs, why not do a little transplanting next spring and have it just right! Fall should give us a climax of pleasant color to take us through the dull winter.

NATURE'S CHARMS

By LORD BYRON

To sit on rocks—to muse o'er flood and fell—
 To slowly trace the forest's shady scene,
Where things that own not man's dominion dwell,
 And mortal foot hath ne'er or rarely been;
To climb the trackless mountain all unseen,
 With the wild flock that never needs a fold;
Alone o'er steeps and foaming falls to lean;
 This is not Solitude—'tis but to hold
Converse with Nature's charms, and view her stores unrolled.



Members of the Horticulture Association are invited to picnic with the Rose Society, Sunday, September 16, at 4 p.m. in City Park near the museum. Bring your own picnic supplies, table, chairs, food, etc.

COTTONWOOD GARDEN SHOP

We will not have trees, shrubs or evergreens for planting till **next March,** but we do have a mighty nice selection of tulips, narcissus, lilies and such for planting now.

Come See Us Sometime

COTTONWOOD GARDEN SHOP

4849 S. Santa Fe Drive *George and Sue Kelly*

SOME FALL COLOR NOTES

BY EDGAR A. JOHNSON, *Landscape Architect, Denver Parks Planning Office*

ALREADY there is a feeling of fall in the air—its a little cooler and the nights are nippy. Soon we will be making excursions into the mountains to see the aspen, and a little later we'll be driving around town with cameras looking for good "shots".

This year let's make a few notes on the fall colors and apply them to our own yard as we plant or replant it. For example, let's look at the aspen and see what we can learn from "Mother Nature." Beyond a doubt, they are spectacular in the fall, but why? Is it their yellow color? Certainly this is part of their glory. When walking into an aspen grove with the bright fall sun shining through the trees, the very air seems colored by their intense yellow. Is it the great masses of them? All of us have stopped our car to enjoy whole hillsides of gold. Is it the contrast of the bright yellow with the dark spruces and pines? I'm sure everyone has composed pictures of aspens to include a spruce or pine as background or contrast.

Now let's see what we can do to apply these things to our own yard. However, in changing from the majestic scale of the mountains to our own small piece of ground, we must apply principles rather than just copying what we see.

First, let's see what we can do with color itself in improving the fall landscape of our own yard. Few gardeners are successful in transplanting the aspen to town gardens, and the results are usually rather disappointing. However, there is no lack of other trees to give us the same bright yellow. Among the yellow trees we could list a close relative of the aspen, the majestic native cottonwood, but this tree is seldom suitable because of its size for our own yards. Better proportioned trees might be the Black Walnut, Kentucky Coffeetree, Silver Maple or Common Honeylocust. The last tree, the old fashioned honeylocust with its dark pods among the yellow foliage, gives far better effect at this time of the year than the newer and pod-less Moraine Honeylocust.

People who have moved to Colorado from the areas of the oaks, maples, sweetgums, and other bright trees are frequently disappointed with the predominantly yellow colors out here and speak longingly of the many varied reds "back home." While the number of trees which can give us these bright colors may be fewer in Colorado, there still are many available. The Norway Maple and its close relative the Schwedler Maple grow here, as well as several species of oak. The Red Oak which is one of the most common oaks in Denver also gives us perhaps the finest variety of red fall color in the oak family.

However, the brightest of the fall colors are not to be found in the larger trees, but in small trees, shrubs, and vines! And plants of smaller size are so much better for small yards. There are two trees in this category that are particularly superb in their fall color. One is the Amur Maple, a dwarf maple tree that never outgrows a yard and turns many shades of brilliant orange and red in fall. If any one shrub or small tree is purchased almost entirely for its fall color this little tree would probably take the honors. It is also excellent

for other uses in the yard. However I prefer another small tree, a very common one, the lowly sumac. I know of no brighter colors through Denver or in the hills than the colors of this plant, both the native sumac and its cultivated cousin. It is true however, that the plant is "weedy" and tends to spread by suckers where it is not wanted; but I believe its other advantages offset this fault. In addition, it is one of the fastest growing plants available here in Colorado. Its tropical-like foliage will make quick work of creating a screen or some much needed foliage around a barren, new residence.

Some other fine small trees are the many varieties of hawthorn. The Cockspur Hawthorn is one of my favorites with its orange foliage, and the Washington Haw has bright red berries that hang on into late winter. The mountain ash also has bright orange fruit in the fall that is very showy. The purple leaf plum turns from a summer dark purple to a fall red, and the birches with their white bark and yellow foliage remind us of the aspen.

But don't forget shrubs! The several species of euonymus with bright red foliage are particularly good, especially where a shrub with an upright habit of growth is needed. Among the more spreading and medium sized shrubs, we should include the cotoneaster, spiraea, and ninebark, and one of the finest is the Japanese barberry, not only for its red fall color, but for its compact habit of growth and thrifty looking foliage in the summer. It is available both in the green and red-leafed varieties.

Before ending our discussion of bright foliage color, I must mention another common and often despised plant which has some of the brightest fall colors as well as many other good but often overlooked features — the common woodbine. This rank growing vine will create great masses of scarlet foliage on walls and fences. A small plant started against an ugly building or shed will in a few years turn it into a mass of greenery during the summer and a blaze of red in the fall. I have seen fences covered with woodbine that provided as thick a screen in summer as would a masonry wall. However, as with most woody vines, the problem of the tangled mass of stems exposed to view during the winter greatly limits its use. This fault might be overcome by trimming the vines back to main stems each year much as grapes are pruned.

I would like to mention that it is not necessary to confine fall color to foliage alone. I have already mentioned a few fruits and seed pods that add to the scene. There are many plants, especially shrubs with fruit, that are colorful in the fall, and these often hang on well into winter.

Mentioned were the fruits of the honeylocust, hawthorn, and mountain ash. One of the finest of the small trees is the Goldenraintree with its yellow seed pods hanging down in a rain of gold. The plumes of seed on the sumac contribute to its color and texture and many other trees have showy seeds.

Among the showiest of the fruits are the red hips on the wild roses, and the red berries on the Highbush Cranberry. The little Snowberry and Coralberry bushes with their white and red berries respectively also make a nice bit of color. One of the most interesting of fruits is that of the Wayfaringtree which starts out green, then turns white, then red, and finally black. The fruit doesn't turn all at once so an interesting varicolored effect is achieved. Other

shrubs with showy berries would include the cotoneasters, dogwoods, and native chokecherries.

So far, we have just been talking about what colors we can use. Now, how should we use them in our small home grounds? Back to the aspen displays in the mountains; remember, we spoke of the great masses of yellow. If possible try the same effect in your own yard. Instead of planting just one little shrub or tree for fall color, try massing them in a large group of all the same plant. A large group or hedge row of bright yellow foliage will be far more effective than a single plant. In selecting shrubs for other uses such as for their flowers, the same principle should be used in getting the best effect. I visited the rose garden of a friend of mine this summer, and while his main rose bed with its many beautiful and varied blooms was indeed lovely, I was most impressed with a single bed planted completely in just one variety of red rose. This great blaze made up of hundreds of red roses of the same color was eye catching and almost breath-taking in its mass of color. This same principle can be applied to many other types of planting.

Finally, let us discuss contrast and background for fall color. As with the aspen, if fall color can be contrasted with nearby foliage that is still green or with an evergreen such as spruce, fir, or pine, the effect can be heightened. This is particularly important in emphasizing a single plant or small group of plants. Here the bright yellows are the easiest, and a pale yellow which otherwise might be lost, will be striking if placed near a dark background. The light colored fruits are also most noticeable when contrasted with dark green foliage.

Then too, a tree or shrub may make a background itself or if a foil is needed may be placed against a background of dark green plants or against an appropriate fence. The important thing to remember is to make your *planting* the thing that is seen —not the ash pit or garbage can next door. Fences of weathered wood are particularly nice for background although any fence which is solid or semi-solid would be fitting.

Thus all these variables make landscaping for fall color a constant challenge and the ever-changing cycle of nature can, with a little imagination, provide a continual riot of color during the exhilaratingly crisp fall days ahead.

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ILIFF GARDEN NURSERY

FALL COLOR IN PERENNIALS AND ANNUALS

By M. WALTER PESMAN

THERE is one annual plant that is grown mainly for its fall color, namely Burning Bush or Kochia. Another name is Mexican Firebush. During summer it is a formal pyramid or ball, quite compact and of fine texture. When it takes on its bronze-red it is sure to turn attention to itself. For accent in fall then, it can be used in spots where a garden has not yet had age enough to depend on shrubs for fall color. The plant, therefore, is unique in its kind.

Other annuals used for fall effect have specific leaf forms to add to their appeal. Such are cannas and castorbeans. They give a tropical feeling difficult to achieve in other ways in our moderate climate. The pity is that they can last only such a short time for just as they are attaining the size needed for proper effect, along comes a frost and these annuals are the first to go. For that reason such plants are of very limited use. They might just as well be called special "fall actors."

Before leaving the annuals in connection with fall, cosmos and seed dahlias should be mentioned particularly; they brighten the autumn and at the same time are indicative of the particular season. In this they differ from petunias, verbenas, annual phlox, lantanas, and other annuals that merely carry through in fall, just as they did in summer and so can hardly be thought of as special fall flowers.

One of these standbys, however, does deserve special mention, and that is Stocks. Ten-weeks stocks (so-called) are particularly appreciated in late October when everything else has been defeated by Jack Frost and they are still blooming in spite of the cold.

Coming to perennials, we can more properly talk of special fall color. A few of them even imitating shrubs and trees by changing their leaf color. One such is Dogbane (*Apocynum cannabinum*), a native plant that turns a golden color in fall, but is rarely seen in gardens. And I remember seeing in South Park the most gorgeous red of the fall displayed by the common rhubarb; Kale too has some varieties that turn color as soon as frost comes.

What the average gardener is usually interested in, is what he can get out of his flowers when summer has passed and phlox has finally decided to stop playing the prima-donna.

Nature seems to follow a color scheme for fall that is strong in the yellows and purples. Cool days seem to favor these particular shades. Most of the Michaelmas daisies, also called fall asters, run to the purples. Some achieve pink, others blue, but they are exceptions.

Sedum spectabile, the Showy Stonecrop, is normally purplish, though other colors have been grown. There is a form of the coneflower (*Rudbeckia*) with purple flowers that is now called *Echinacea purpurea.* A most attractive lavender is the Fall Crocus (*Colchicum autumnale*) that only blooms in fall and only has leaves in spring. Joe Pyeweed (*Eupatorium*) is in the purplish range but is too coarse a plant for all but the largest-scale borders.

Some of our finest blue flowers

are particularly good in fall. Aconitum is good where it can have much shade. *Salvia azurea* and *Salvia pitcheri* prefer sun; both are good fall bloomers. Delphinium generally makes a good come-back in fall. Platycodon keeps blooming into October. Then there is one low perennial with excellent blue fall color: plumbago (*Ceratostigma plumbaginoides*). It is so little known and deserves a bit of publicity. Low perennials are so very rare in fall!

Yellows seem to be natural in autumn, whether it be in leaf coloration or flowers. Think of Goldenrod (*Solidago*), Golden Glow (*Rudbeckia laciniata*), Black-eyed Susan (*Rudbeckia hirta*) and the different types of Helenium, now seemingly out of date. (Why, oh why, do nurserymen drop certain old standbys just because they are not touted up?)

There are excellent yellows in the new chrysanthemums, as well as bronzes, pinks, whites, and reds; to start talking about varieties would overbalance this article. Let it just be stated that it is possible to get almost any type and color, spread over a very large period of blooming. The mum is really coming into its own!

After mums, everything is anticlimax. Just to be complete we should mention such good white fall flowers as Boltonia much like a Michaelmas daisy, and bugbane, (*Cimicifuga foetida*,—the specific name gives her away!) Ghostplant wormwood (*Artemisia lactiflora*) is another good tall perennial that seems to have lost favor but it is still good.

If The Green Thumb were also generally read in Southern Colorado, New Mexico, Texas, etcetera etcetera, there should be another section added to this article. It has to do with a number of semi-tropical plants that take a long time to start blooming. For that reason they can hardly be a success in regions where the season is short; just when they are ready to flower, a frost comes along and spoils it all. Such are the Hawaiian hibiscus; but an American species makes out all right. Redhot Poker or Torchlily (it has recently had its botanical name changed from *Tritoma* to *Kniphofia*) will generally bloom all right, and with some winter protection it need not be replanted. Some South African plants belong in this category; they often are successful unless an early frost interferes.

The Mexican Shellflower or *Tigridia* often starts blooming just as frost comes.

Some day our plant scientists are going to produce special varieties of these semi-tropical perennials that will mature more quickly. Then we'll again add to our wealth of plant material that makes fall more glorious than ever.

In the meantime, we already have plenty of good trees, shrubs, perennials and annuals so that our gardens can wind up the year in a burst of glory.

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DAHLIAS

By W. W. WILMORE

IT is quite probable that no one had more to do with popularizing the dahlia than my father, W. W. Wilmore. It is a known fact that he published the first exclusive dahlia catalogue in the United States as well as a dahlia manual (a treatise on the culture of them) which I believe was published in the spring of 1906. A revised edition of this manual followed some eight to ten years later. He introduced literally hundreds of varieties of named dahlias and put them on the market, many of which are still being catalogued today.

Good dahlias are not the easiest item to grow in a summer planting, but if diligent care and attention are given to them and they are planted in proper season, the results obtained are more than gratifying.

CULTURE

Dahlias should not be planted later than May 10th as a deadline—at least in the Denver area. Because of the usual early fall frosts, there would be few blooms if planted after the above date—the ideal planting time being around April 25th to May 1st. Dahlias like a rich soil and considerable water from the time they set their buds and are about ready to bloom until the frost period in the fall. They are also heavy feeders and if the ground is prepared in advance, which it should be, a reasonably heavy use of cow or stable manure should be incorporated into the soil.

In planting, dahlia tubers should be placed horizontally and covered to a depth of about four to four and one-half inches, and, if in evidence at the time, the eye in the tuber should be pointed upward. When planted in season they will come along rather rapidly and when about eight to ten inches high should be sprayed frequently for thrip. Any insecticide that will control aphis will also control thrip. Thrip has a tendency to stunt or runt the plant if neglected.

There are many types of dahlias. Singles, collarettes, peony flowered, decorative, show, cactus, and hybrid cactus are the main ones which come in practically every color of the rainbow other than actual blue. Dahlias planted around May 1st should start blooming about the 1st of August depending on whether they are an early or late variety and they will continue to bloom up to the frost period.

Once the dahlias have been killed by frost they should not be allowed to stay in the ground for too long a period. The tops should be removed, the tubers carefully dug (preferably with a potato fork), and the dirt gently tapped from the clumps. Then cut the top stems back still further to about two inches above where the roots have formed. They should not be allowed to lie around in the sun and dry out. As soon as possible store the clumps in some type of container, preferably in a barrel or in something with depth, and place in a spot that is frost proof and yet is not too near a furnace or any other place that might get too warm.

Normally a fruit room is ideal. It would be advisable also to go to the expense of buying a little sphagnum moss to put over the top of the tubers and the moss should be moistened a little to hold and preserve the moisture in the tubers so as to prevent them from drying out and shriveling during the winter. They should be checked from time to time and if necessary more water applied to the

moss to check this feature. Here a word of advice is necessary. The container in which they are stored should have one or more holes in the bottom so that if it is necessary to add moisture, any excess will drain out and not collect in the bottom to rot the tubers.

March 1st is an ideal time to divide the clumps and get them ready for planting a few months later. After dividing, pack them back in the sphagnum moss.

As previously stated, growing dahlias is not too easy and does require considerable work in cultivation throughout the summer, as well as careful control of certain insect pests such as thrip and aphis, and the taller varieties should be staked as a protection against wind and rain damage. However, even though there is considerable work in growing good dahlias, their beauty more than makes up for it.









Cactus type dahlias that were popular in the early 1900's.—These cuts are courtesy of W. W. Wilmore and appeared originally in his father's catalogues between 1910 and 1920



COLCHICUM

By Mrs. John W. Newman

SOME twenty or more years ago my husband and I were intrigued by an ad which read something like this: "Buy these bulbs and lay them on your window sill. They will bloom for you without soil or water." We invested in three. Two did as the ad said, the third died. Some catalogues still use a similar statement to attract your attention.

Colchicum is an intriguing bulb for two reasons. First it has its leaves and seeds in the spring. Second it blooms out of the bare ground in late August until early October.

Good garden soil or sandy loam is all that it requires. Plant the tall bulbs so that the tips are about three inches below the surface of the ground. The less you disturb them the more they will increase, and soon you will have a mass planting in your border. I like them planted at the base of trees and shrubs where they get plenty of sun, although they will grow in partial shade. And I have found them free of disease and bugs.

It is surprising to see the tube appear in the spring which opens out into three or four leaves. The leaves are broad at the base and taper to a point. They are about 3 inches wide and 8 to 12 inches long with smooth wavy edges much the shape of lilies-of-the-valley leaves. In the center of these leaves, three triangular seed pods appear. It is best to remove these seed pods and let the strength remain in the bulbs. The leaves will mature more quickly too. For a short while that spot in your garden will be untidy but do not cut these leaves



Colchicums send their leaves and seed pods up in the spring.

off. Instead, tie them up in bundles as some people do with tulip and narcissus foliage or just overlook the curing process by admiring other flowers close by.

Then, when you least expect it, you will be surprised in fall by one of nature's wonders — beautiful orchid to purple-colored crocus-shaped flowers suddenly appear on rather long white tubes. Although they look fragile, they are wonderful for long lasting garden flower corsages and low arrangements, but be careful not to bruise the petals.

The most common variety is Autumnale. Some catalogues list five or six varieties, a white one among them. There are double ones too. Bailey says there are also yellow ones but these are very hard to grow and are the ones from which narcotic poison is obtained.

If you want a highlight in your garden, one that attracts many *Ohs* and *Ahs*, plant a bed of these bulbs. They will give you pleasure for years and be a source of *great* satisfaction.



They bloom out of the bare ground in late August or September.

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ORIENTAL POPPIES

CONTRARY to what most people think, oriental poppies can be either planted or transplated any time the ground isn't actually frozen, provided the foliage and bloom (if they happen to be blooming at the time) are cut back to the ground. Then if they are kept wet, almost soggy wet, until after they are well established, there should be no difficulties. Once they have established themselves, a deep watering once a week is all they need. In fact their root system is so deep that poppies withstand drought well.

Propagation, as with most hardy perennials, is quite easy but should be from root cuttings or divisions, for poppies started from seeds will not come true to color. Plant them in partial shade (full sun sometimes fades the colors) 3 to 4 feet apart for they do not do well when crowded. In three years a plant will reach a diameter of 3 to 4 feet and a height of 20 to 38 inches. Do not use too much fertilizer for it stimulates a rapid growth that is weak. A cow or sheep manure which is relatively free of weeds is good if used in moderation.

Poppies begin blooming March 1st —frost doesn't seem to discourage them—and go dormant around August 1st. If the bloom stalks and leaves are cut off after the first bloom, a second sparse bloom may be had in the fall.

There are as many as 300 to 400 varieties of poppies in all colors and sizes in both single and double forms so that color clash need be no problem. So many people think only of the brilliant orange red variety that is difficult to place with other landscaping.

Mr. Hoy of Iliff Garden Nursery generously gave us the information for this article.

The following list gives some of the available varieties in the Denver area:

Cavalier—deep red
Henry Cayeau—ashes of roses (lavender)
Field Marshall von der Glotz—white
Sass Pink—a large pink
Wunderkind—deep rose pink and *large*
Mary Jane Miller—flesh pink
Spring Morn—flesh pink
Gold Ophir—orange
Mandarin—red

This fall when planting bulbs for next spring, be sure to include oriental poppies for variety, texture, and color splash.



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DUTCH BULB MEN WARN AGAINST DECEPTIVE LABELING

THE tulip bulb growers of the Netherlands today served notice on all dealers that they could be prosecuted under new Federal Trade Commission regulations if they traded unfairly on the reputation of bulbs from Holland.

Gustave Springer, U. S. spokesman for the Associated Bulb Growers of Holland and the Holland Bulb Exporters Association, called attention to the new fair practice code for the nursery industry which was released today by the Federal Trade Commission in Washington.

The code contains the following provision:

"It is an unfair trade practice to sell, offer for sale, or advertise an industry product under any representation which has the capacity and tendency or effect of deceiving purchasers or prospective purchasers as to the origin or source of such product (e.g. by use of the term 'Holland' to describe bulbs which were grown in the United States of America) . . .

"It is also an unfair trade practice to advertise, sell, or offer for sale an industry product of foreign origin without adequate and nondeceptive disclosure of the name of the foreign country from which it came, where the failure to make such disclosure has the capacity and tendency or effect of deceiving purchasers or prospective purchasers."

Mr. Springer said a reading of this language makes it obvious that all tulip bulbs offered to the American public as "imported" must reveal the country of their origin. "In other words," he said, "the dealers cannot say they are 'Holland bulbs' or 'Dutch bulbs' unless they were actually imported from the Netherlands. If the bulbs were imported from any other country, the dealer cannot say 'imported' without specifying what country they came from.

"It has been conclusively established by consumer surveys that the phrase 'imported tulip bulb' conveys to the average gardening customer the belief that the bulb was imported from the Netherlands. The bulb farmers and experts of the Netherlands intend to protect the reputation for quality and size which they have built up over many generations. They do not intend to stand by and see another product, of lower standards, reap the benefits of their efforts under the blanket term 'imported.'

"We are delighted that the nursery industry has a fair practice code in this country after so many years, and congratulate the American Association of Nurserymen for having started the ball rolling. We are sure the Federal Trade Commission will back up this code with strict enforcement, and we intend to be vigilant in protecting the public from misrepresentation in the sale of bulbs."

Mr. Springer revealed that 97 percent of all tulip bulbs imported into the United States last year were imported from the Netherlands.

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THE STORY OF ALL AMERICA ROSE SELECTIONS

By CLYDE E. LEARNED

FROM the numerous inquiries received and the many questions asked, it is apparent that many people are curious as to how the annual All America Rose Selections are made and what the American Rose Society has to do with the selection. The answer is that the selection is under the control and jurisdiction of the group known as the All America Rose Selections which is entirely separate from the American Rose Society.

In order to arrive at a sound evaluation of the new roses introduced, the AARS group formulates its own rules and regulations, picks the judges, and selects the location of the gardens in which the roses are to be tested. As of April 1956 the All America Rose Selections group maintained 25 test gardens, scattered throughout the United States. In the selection of this system of test gardens, types of soils and variations in climatic conditions are the major considerations. The only test garden in the Rocky Mountain region is located at the Kirkland Nursery at Bountiful, Utah, a few miles north of Salt Lake City.

When the Denver Botanical Garden at City Park is nearing completion and satisfactory arrangements are made to expand and maintain the rose gardens, an effort should be made to have an All America Rose Selection test garden approved for City Park.

In the growing of roses, it is probably true that more progress has been made in developing roses during the past 16 years than was made during the preceding 50 years. Two things were responsible for this improvement; first, the plant patent act of 1930, and second, the formation and success of the All America Rose Selection group.

The plant patent act put rose hybridizing on a business basis by permitting growers to introduce and market new varieties of roses with the assurance that if the rose met with the public fancy the growers would be in a position to realize a fair return for their work and from their investment.

Soon after the Plant Patent Act became a law it became evident to the leading rose growers and hybridizers that a nationwide testing of roses was necessary before the new roses were introduced and sold to the public. The reason for this was that many people got the impression that if a rose was patented, it was a superior creation and would be desirable to have in their gardens. As might be expected, this mass introduction of new roses, many of which turned out to be mediocre or failures, caused dissention and destroyed public confidence. Actually the receipt of a patent on a rose only means that the rose is different from any one that has previously been introduced, and has nothing to do with the quality.

In an attempt to remedy this unsatisfactory condition, seventeen of the top rose growers met in Chicago in 1939 and formed the All America Rose Selections, which was incorporated in 1941. Under the new procedure set up by the group the plants are scored and judged by qualified and impartial judges for a period of two years.

To win the coveted award, the rose must excel in the following 13 points: Habit, vigor, disease resistance, novelty, floriferousness, foliage, bud form, flower form, substance, color opening, color finishing, stem, and fragrance.

Each rose is rated at five successive stages of growth over an 18 month period. At the completion of the tests, scores from all test gardens are compiled and the roses with the highest averages are voted on by the board of master rosarians to ascertain if they are All America Rose Selections.

When an exceptional plant is developed and the grower plans to enter in AARS competition, it is necessary for him to supply four plants to each of the 25 test gardens. In addition, the originator must propagate at least 1500 plants of each variety in the year before the entry is made. The reason for this is to provide propagating wood for future large scale production. In case the rose rates fairly high after the initial judging, about 20,000 plants are budded. Should the rose become an AARS winner the originator is then in a position to supply budwood to the other AARS members for the budding and growing of the winning variety.

A period of from 7 to 10 years goes into the development of any new rose from the time it is first crossed until it becomes available at your local nursery.

In 1940, the first year of the trials, four roses received AARS award. Since that date and through 1956, 700 roses have gone through the trials, but only 6% or 43 roses have received the AARS award. In 1951 the board did not deem any rose worthy of the award, whereas in 1948 six roses were selected.

In 1955 the following 3 roses were selected:

TIFFANY — Hybrid Tea. This beautiful rose is classed as a pink blend. The buds are long, the petals being golden yellow at the base shading to deep pink. Under proper conditions this rose grows from 3 to 4 feet in height. During the first year the members of the American Rose Society gave this rose a national rating of 8.7. This rose, which is very fragrant, is one of the outstanding roses in the City Park Rose garden.

QUEEN ELIZABETH — Grandiflora. This newly-created class is a result of a cross between a hybrid tea and a floribunda. Currently, Queen Elizabeth is the only rose in this Grandiflora class which has won the AARS award. This excellent rose is classed as a medium pink and normally grows from 3½ to 5 feet in height. During the first year it received a national rating of 9.0.

JIMINY CRICKET — Floribunda. This striking and attractive rose is classed as an orange blend, and grows from 18 to 30 inches in height. During the first year it received a national rating of 8.0.

All three of these introductions are making a fine showing in Colorado gardens.

In 1956 only one rose was selected:

CIRCUS—Floribunda. This multicolored rose is a mixture of red, pink, orange and yellow and is classed as a novelty rose. Undoubtedly this rose with its variety of colors will be one that is much liked or disliked.

As is customary, the 1957 AARS winners were announced in June 1956, and two roses were selected:

WHITE BOUQUET — Floribunda. Unfortunately the test roses received for the City Park gardens were not in very good condition when

received and a fair rating of these roses is not possible at this time.

GOLDEN SHOWERS — This golden yellow pillar and climbing rose has the distinction of being the first rose in this class since 1948 to win the coveted AARS award.

Twelve popular All America Rose Selections that do well in the Rocky Mountain region are:

1941 Award — Charlotte Armstrong H.T. Cerise red Nat rating....9.0
1945 Award—Peace — H.T. Yellow Blend Nat. rating.....9.6
1947 Award—Rubaiyat — H.T. Cerise red Nat. rating 8.2
1948 Award—Nocturne — H.T. Dark red Nat. rating 8.1
1949 Award — Tally-Ho — H.T. Light red Nat. rating.....8.4
1950 Award—Fashion - Floribunda— Coral pink Nat. rating.....8.9
1950 Award—Sutter's Gold — H.T. Golden yellow Nat. rating.....8.1
1952 Award—Helen Traubel — H.T. Apricot pink Nat rating.....8.7
1953 Award—Ma Perkins — Floribunda Shell pink Nat. rating....8.0
1953 Award—Chrysler Imperial — H. T. Crimson red Nat. rating....8.8
1955 Award—Tiffany — H.T. Pink Blend Nat. rating.....8.7*
1955 Award — Queen Elizabeth — Grandiflora—Med. Pink Nat. rating 9.0*

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*Subject to change with further reports from American Rose Society members.

The Colorado Gladiolus Society held its 3rd annual show Sunday, August 12, in the Ford Motor Building.

Honors in the Amateur Division went to Don Street. He is a newcomer to our society but certainly not new to the "Glad Hobby". His spike of Zig Zag won Grand Champion of the Show and was awarded the NAGC roseatte.

Section Champion ribbons were awarded as follows:

100-200 Class — Zig Zag — Don Street
300 Class — Garnet Ruffles — Don Street
400 Class — Fort Knox — Don Street
500 Class — Nellie Lou — Don Street

He received the NAGC bronze medal for Sweepstakes in the Amateur Division.

Honors in the Open Division were divided—Section Champion ribbons were awarded as follows:

100-200 Class — Statuette — Sid Baldridge
300 Class — Vagabond Prince — Loveland Glad Gardens (Al Foster)
400 Class — Firebrand — J. E. Thayer
500 Class — Pink Pride — Sid Baldridge

Firebrand went on to be Reserve Champion

Sid Baldridge won the NAGC bronze metal for sweepstakes in the Open Division. He also received the West Texas Gladiolus Society's Meritorious Award in the Seedling Class for his outstanding entry.

Lee Ashley, with 42 points, won the sweepstakes ribbon in the combined division of arrangements and corsages. Miss Margaret King was runner up with 34 points.

Our judges for Horticulture Amateur were: Mrs. F. C. Vetting and Mr. Al Foster; Open: Mr. H. C. Gundell and Dr. Jack Durrance; Arrangements and Corsages: Miss Bernice Lang and Mrs. Alonzo Lilly.

D. C. McAuliffe, Secretary

AN INEXPENSIVE RETAINING WALL

PROJECT houses give us the most for the money in the way of a moderate priced home, but the contractor must mass produce the grading plans on the individual houses along with the structures themselves. Purchasers of these homes who have a desire to create a pleasing landscape often have to regrade their yards. More usable space can be developed in many instances by utilizing a retaining wall to modify a steep terrace or to raise the elevation of a portion of the property. Many elaborate and expensive walls can be designed and constructed, but economical solutions are few. Here is one that the do-it-yourself gardener might tackle where the change in grade is not too great.

The basic ingredients are concrete blocks, iron pipe stakes, concrete, and a fair amount of perserverance. Although concrete blocks can be made into a strong retaining wall when supported by an adequate foundation and suitably tied into the bank, this project is more modest in construction. It should be limited to a low wall of 2½ feet or less. The exact height must be determined as well as the length of the wall. Often the height will decrease as the wall blends into the existing grade in a sloping lawn area. With the basic measurements determined, the builder can enjoy a few moments of mental gymnastics computing the number of concrete block units required. Each block is approximately 16 inches long and 8 inches high. Either 6 or 8 inch wide blocks can be used, but if there is a corner in the wall, enough 8 inch blocks must be ordered to build up the corner. This is to keep the slots in the 6 inch units in line by staggering the vertical joints one-half the length of the blocks. In figuring the height of the wall, allow enough of the 8 inch high courses or rows so that the bottom of the wall extends well below the existing ground surface.

After the required blocks have been assembled (at 22 cents each) the work can begin. The first step is to determine the location of the wall and stretch a stout string or chalk line between stakes to mark the outer face of the blocks and the approximate top of the wall. If there is a corner, the work should start there. Dig out a trench under the chalk line of sufficient depth, so that the blocks will just come up to the required grade when stacked on top of each other. No allowance should be made for mortar joints. If there is a corner, the corner blocks are put in place and leveled. As work progresses away from the corner the blocks may be leaned slightly toward the bank. The level can be carried easily from one block to the next with a long hand level or mason's level. Once the first course is leveled, succeeding rows can be placed in position quickly.

With the blocks in place the wall is ready for the stakes and concrete. Old salvage pipe is cut up into lengths and driven well down into the ground through the openings in the blocks. Stakes should be spaced so that there is one in every alternate block as a minimum. The top of the stake should be driven below the top of the wall. Concrete is then poured in the slots and around the stakes. This gives the wall a substitute "foundation" and the concrete locks the block units together. Additional concrete should be poured into the remaining slots to form a continuous concrete wall. The concrete can be struck off smooth or a course of patio or cap blocks can be laid on top of the wall in a full bed of mortar to finish off the job and cover the

slots in the blocks.

If there is danger of settlement in a newly graded area, it is well to lay the wall dry, perhaps with a few stakes driven in to secure it. Then after the area has settled, the blocks can be relaid if necessary.

This block wall is quite attractive and blends in with any landscape. It is a project that can be done in easy stages as time permits, and it should be within the budget of most everyone. It may not satisfy the perfectionist and it has definite limitations as to height, but it may be the answer for many of the green thumb experts in the 'let's do it ourselves' class.

Robert Woerner

PUTTING THE GARDEN TO SLEEP

By Evaline C. Butterfield

GETTING the garden ready for winter is really a continual process begun with the removal of dry tops from spring bulbs that have finished blooming. Then as one perennial after another finishes blooming it can be cut back to half at least. Sometimes this even induces a second blooming period as with certain varieties of phlox. When the annuals finish and dry up, they may be pulled up to give the late summer and fall blooming flowers more space and to give the bed a neater appearance.

Winter Storage of Bulbs

After the first frost, dahlias should be cut down to about three inches. Then after a few weeks, dig them and store them in boxes or baskets filled with soil. Water twice during the winter to prevent them from shriveling—once around Christmas, and once sometime in March.

Gladioli are dug and dried in the sun for a week before storing in mesh bags which are then hung in a cool, well-ventilated place.

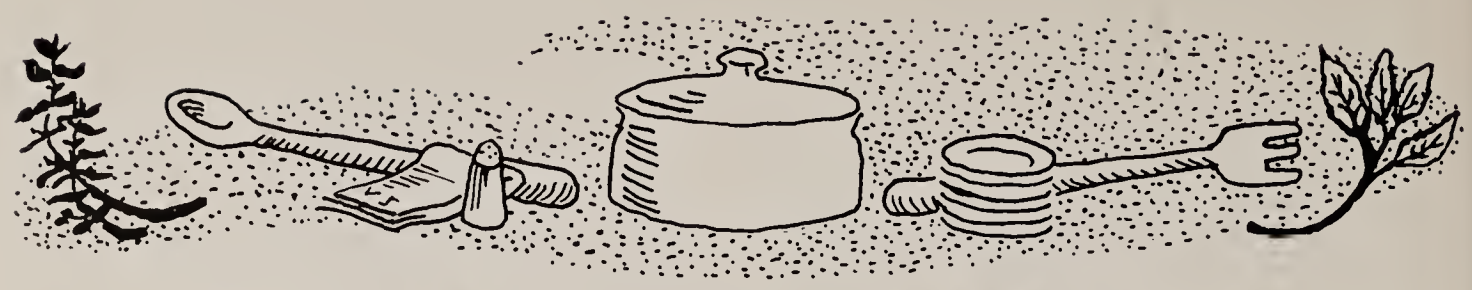
Be sure there's no mulch or dry leaves on fox gloves, delphiniums, or chrysanthemums through the winter for mulch causes them to rot and is the major reason so many people lose their mums during the winter.

After a killing frost the rest of the perennials can be cut down to the ground, leaving the garden neat for the winter, and last but not least, prepare your roses. Cut them down to about thirty inches. This pruning will prevent breakage from snow.

Then pour a bucket of well-rotted cow manure over the crown of each rose plant. This doesn't seem absolutely necessary for there have been years when I didn't do it and the roses came through the winter all right.

If there is any fertilizer left over, spread it over your flower bed.

A coordinated national effort is being made to rid America's highways, parks, beaches, and other places, of litter—paper, wrappers, cans, bottles, containers, and the like. It is being headed by Keep America Beautiful, Inc. (KAB) and is supported by some industries whose products are carelessly strewn around by the great American public. The program is being built around long-range continuing education to create awareness of litter as a responsibility of the individual. It is hoped that the public's habits can be changed to the extent that it will become unpopular as well as illegal to be a "litterbug."



HERBS MYSTERIOUS

By MELANIE B. BROWN

SAGE (Salvia officinalis L.)

"To use in wounds and broken arms

Some had their salves and others worked their charms,

And sage they drank, and likewise remedies

Of herbs, for they would save their limbs with these."

—From Chaucer's *Canterbury Tales.*

Sage, as a medieval remedy for broken bones as implied in the above exerpt can hardly be taken seriously in the light of 20th century medicinal knowledge, but still valid are its old uses in the culinary realm which date back at least to the Anglo-Saxon England of 1393 when it was used in sauces made of wine, sage, parsley, garlic, and thyme. In fact many other culinary herbs formerly used in years past but since forgotten, would be a welcome addition to present-day dishes. Sage, however, has been used in so many ways and is so easy to grow that it has never lost its popularity. Prized originally for its supposed more often than medicinal qualities, it became, and still is, a popular seasoning for strongly flavored meats such as pork, goose, sausage, and veal, and for sauces.

Before the use of hops, it was a staple in brewing and was commonly used in cheese. Sage tea dates back to Hippocrates, the father of medicine, who used it as a diaphoretic in fevers and incipient colds. Today the essential oil of sage contains four terpenes used in the perfume industry —pinene, cineol, thuyone, and borneol. The plant is grown commercially in France and in our Southern states for these products. Several varieties are used in cooking, medicine, and industry, but the most commonly useful are clary, garden, meadow, and pineapple sage. All self-sow freely. Each has its own particular qualities for medicine, industry, and kitchen, but perhaps the most satisfactory one is Garden sage, the leaf of which has been used medicinally as a gargle, astringent, vulnary, to induce perspiration, to use as an adulterant in oil form for rosemary and lavender oils, and industrially in hair washes. For use in the household, the leaves can be rubbed on the teeth as a dentifrice, smoked as tobacco, or steeped for tea. In cooking, garden sage can be used (as stated earlier) in poultry stuffing, sausage, pork dishes and soft cheese. In the fourteenth century sage was used for ailments to such an extent in wine, tea, and bread that a prevalent saying was, "Why should a man die whilst sage grows in his garden?"

The following recipe for herb bread, reminiscent of the fourteenth century sage bread, was generously given us by Mrs. William A. Hancock with Mrs. Albert Coleman's permission. Fortunately today, it need not be used just for "ailments" but can be enjoyed as a delightfully new eating experience for the connoisseur

or anyone seeking something refreshingly different for jaded appetites.

Herb Bread

2 cups milk
4 tablespoons sugar
2 teaspoons salt
1 cake yeast (or 2 cakes for quick rising)
2 eggs, well beaten
2 teaspoons nutmeg
4 teaspoons leaf sage crushed
(modify according to taste)
3 teaspoons caraway
7 cups sifted flour
4 tablespoons shortening

Scald the milk, add sugar, salt, and cool to lukewarm. Crumble in the yeast and stir until dissolved. Add the eggs, nutmeg, sage, caraway, half of the flour, and beat until smooth. Add melted shortening and remaining flour or as much flour as needed to make the dough easy to handle. Knead quickly and lightly until smooth and elastic. Then place dough in a greased bowl, cover, and put in a warm place free from drafts to rise until double in bulk (approx. 2 hours). Knead down and divide it into equal parts shaped into loaves. Place in greased bread pans. Cover and let rise again until double in bulk (about 1 hour) and bake in a hot oven, 425 degrees for 15 minutes. Reduce heat to 375 degrees and finish baking for 35 minutes longer. This makes a brown, crusty outside. Slices of the bread are particularly good toasted.

Sage added to the dough of biscuits to be served with creamed chicken makes another savory dish.

Houseflies are studied in aircraft laboratories. Every action of their bodies and wings are observed in an air tunnel. Through photographs and study this information aids aeronautical scientists and navigators to improve aircraft design.

The University of California maintains the only bug hospital in the world. Diseases of bugs are treated and studied. Bottles of sick or dead bugs arrive by mail daily. One farmer in Italy was plagued by aphids which damaged his almond trees. On analysis, the aphids were found to have been killed by a fungus. Now the Italian farmer grows the fungus to spread among the almond trees.

The wasp has a surgeon's skill and knowledge, it would seem, in her use of anatomy. Though various insects have ganglia (nerve centers), in each insect the ganglion is located differently. The wasp always stings its victims in exactly the correct spot. The insect must be paralyzed but not killed for it must remain fresh for the larva of the wasp to feed upon.

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JUNIOR GREEN THUMB

INTERVIEWING A JUMPING BEAN

By VIRGINIA SENA

"BUENOS Dias, Amigos! Look down here, in the bean! Come here close and bend down your ear. My voice, she is not so big.

Caramba! You still do not know where I am. Ouch! This time my head she hit very hard on the wall. My house she must have turned over from this blow. There! Now you know I am in the bean.

Buenos Dias, Amigos! Can you not answer? Didn't your mother teach you manners? But, of course, this is Colorado, not Mexico. You do not speak the Spanish. "Buenos Dias, Amigos" means "Good Day, Friends". Back in Rosario where I come from we all speak Spanish.

You cannot see me. I am a little larva (worm), about the size of-eh, half a paper match. I live in this bean, which you Yanquis (Americans) call a Mexican jumping bean. Where I come from, we know each other as 'brincadores' (jumpers). If *I* were not in the bean bumping my head against the wall, the bean would not move. What do you say? Why do I bump my head against the wall? This is the only exercise one can get in such a little house. We larvae live in these beans nearly a year.

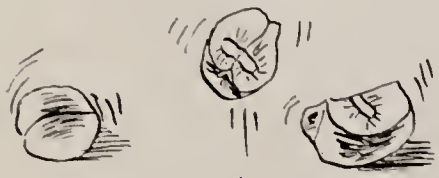
How did I get in this bean? Many months ago, my mother was flying around in Mexico. She was a moth, gray with black spots. She laid eggs on the flowers of an arrow plant which we in Mexico call Yerba de Flecha. The fellows called botanists who study plants, called the plants *Sapium biloculare*.

When the flowers finished blooming and turned into seed pods, caramba! there I was in a seed pod! My mother, she was a clever moth. Entomologists, the fellows who study bugs, call her Carpocapsa saltitans. Isn't that a splendid name?

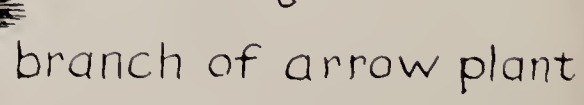
Now I am a clever girl, too. I line my seed pod with a web I spin. The seed pods would otherwise explode—poof! scattering seeds in the wind for that's how the arrow plant sows more plants. My web holds the pod together.

So there I am, snug in my little




jumping beans

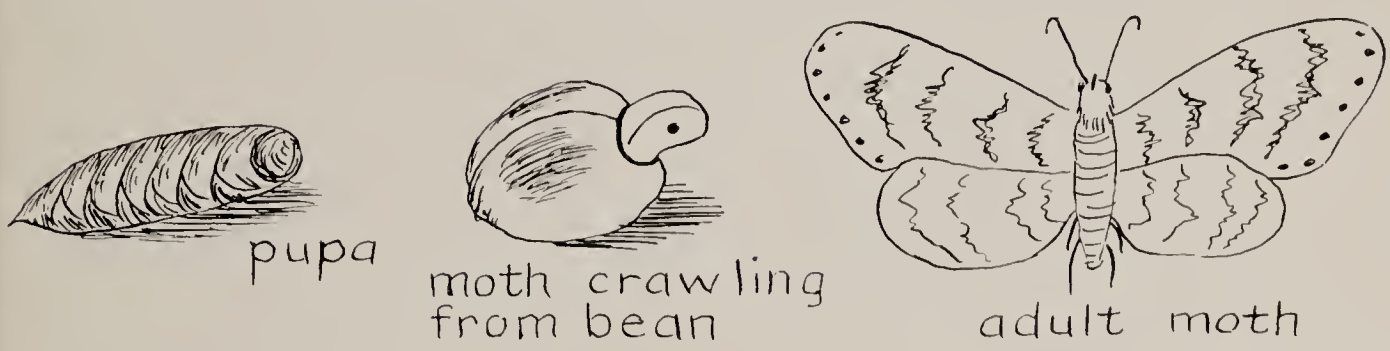

larva


branch of arrow plant

bean. The bean, she fall to the rocky hillside and go tumbling down. I help, too, by pounding my head against the wall which makes the bean hop along the ground. A crack between two rocks would be a good place to hop to. That would be safe for the summer. But, no, a little boy pick me up before I find a hiding place. He sell me to the big business man, the jumping bean broker in Rosario. He sell me to an American who bring me here to a carnival. And then you kids buy me.

Pretty soon I must start drilling a door in my bean house. It will not be open yet, but be ready to push open easily when I become a moth. About Thanksgiving I make a shiny case to sleep in while I change into a moth. While sleeping, I am a pupa. When I wake up, I push the door open and crawl out, a grown up moth. Then I can fly around and see the sights.

If I were back in Rosario, I would go looking for other moths and marry and lay eggs on an arrow plant flower. So a new family of jumping beans would begin. But, you know what? Some of us secretly hope we'll be picked up and sold to carnivals. This way many people, including you, see us.



The wooden timbers of the good ship Mayflower, which brought the Pilgrims to this country in 1620, are still in use today. The ship was dismantled in England in 1629 and its curved wooden ribs were turned upside-down to form the rafters of a building which still stands.

Oak, long recognized as a wood of great strength and quality, was once the tree of the God of Thunder and was so respected that a law in Saxony prohibited its injury.

TULIPS, HYACINTHS AND CROCUS
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A FEW BITS OF DENVER PARK HISTORY

CIVIC CENTER was once covered with houses and even a power plant. These were all purchased one by one and demolished in order to create this world famous beauty spot. The cost of the land was $1,814,539.00, certainly a staggering sum back in the early nineteen hundreds.

CHEESMAN PARK was originally a congressional grant in 1872 for cemetery purposes. When it was proposed as a park the idea was scoffed at because the site was too far out of the city.

CURTIS PARK was Denver's first park. One block of this park was acquired in 1868 as a gift from the pioneer surveyors Case and Ebert. At that time is was beyond the built up area of the city.

A BOULEVARD was once planned to connect City Park and Sloan's Lake, and even a survey for the road was made. However, the boulevard was never authorized.

CITY PARK development was started about 1881 but legal title to the land was not completed until 1889.

A CHARTER AMENDMENT passed in 1887 required city council to appropriate ¼ of a mill levy for park improvement each year.

SPEER BOULEVARD, SLOAN'S LAKE PARK, AND ROCKY MOUNTAIN LAKE PARK were all acquired during Mayor Speer's first two terms when Denver's park acreage was increased from 572 acres to 1,183 acres.

OVERLAND GOLF COURSE was once a race track. At one time there was also a public camp ground for tourists on the site.

PLATT PARK was once the private estate of the Fleming family. The original house is now being converted to a recreation building. This house was at one time used as the South Denver City Hall. The jail with heavy wooden bars is still in existence in the basement of the building.

SLOAN'S LAKE once had an amusement park on its north shore called Manhattan Beach. Also there were originally two lakes, Sloans and Coopers.

HIGHLAND PARK was once a nursery and many of the present trees and shrubs are remnants of the old nursery plantings.

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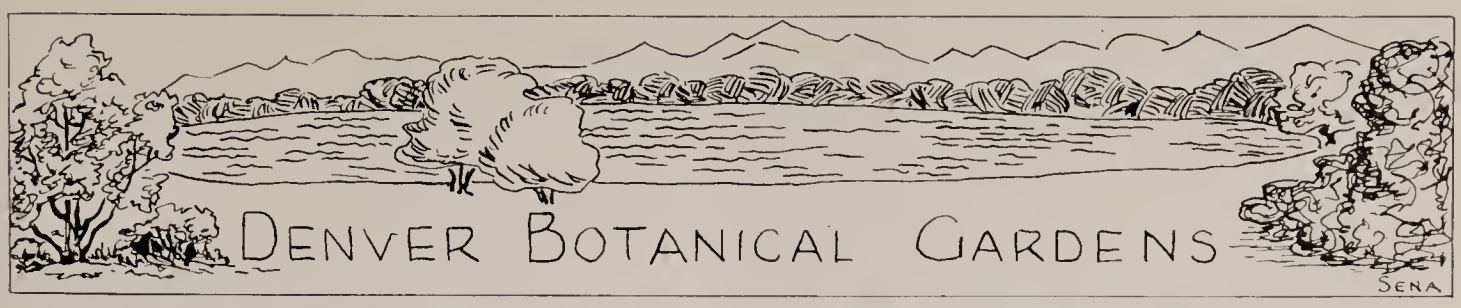
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THE BOTANICAL GARDEN IN AUTUMN

By Robert Woerner

WHEN we think of autumn in the Botanical Garden, we think first of our old friends, the roses. Our rose garden which has been blooming steadily throughout the summer months comes forth with a special display of red, pink, yellow, and white colors in the cool temperatures of September. Yet, as the nights grow cooler, and the frosts of fall nip at the plants, we must look elsewhere for things of interest. We must seek out those trees and shrubs which bear colorful fruit or foliage. Our young garden would not seem to have much to offer, but we must look closely at the mature trees about us in City Park, and search the shrub borders to find the color that we need in the autumn landscape. There are over fifty species of deciduous plants in our area, and many of them have interest in the fall. We may add to these the eighteen species and varieties of evergreens scattered throughout the older plantings, for their dark green shades serve to set off the fall color of the deciduous plants.

A walk through the east end of City Park will enable us to discover many trees and shrubs notable for their autumn hues. Starting at the steps on the west side of the museum, we are greeted by the orange and red tones of the hawthorns on the edge of the terrace. Their red fruits, borne in great profusion, always attract the interest of visitors. At each end of the rose garden the Ohio Buckeye, *Aesculus glabra,* adds a brilliant orange to our artist's palette of colors. This color is picked up again by the scarlet to orange foliage of the Common Smoketree, *Cotinus coggygria,* in the shrubbery along the drive to the north. In the same area, plants of the Vanhoutte Spirea, *Spiraea vanhouttei,* contribute their orange-red hues.

Returning to the south end of the rose garden, we meet the vivid splash of red of the Amur Maple, *Acer ginnala.* This particular tree has suffered in its development, and, lacking good form, is of value only for its fall color. Passing through an evergreen grouping and continuing southwest, we are rewarded by the scarlet of the Pin Oak, *Quercus palustris,* which occurs as an isolated specimen. In a large shrub bed to the south we see the reds of the Snowball European Viburnum, *Viburnum opulus roseum,* along with additional plantings of Vanhoutte Spirea. At the south end of this bed the White Fringetree, *Chionanthus virginicus,* exhibits its brilliant yellow fall attire. A volunteer in the same shrub group is the Virginia Creeper, *Parthenocisus quinquifolia,* which is easily recognized by its leaves which occur in groups of five. This trailing vine turns a dark red in the fall to add its bit to our color scheme.

At this point we must cross the drive to the small lily pool. Careful

observation will detect the small red leaves of the familiar Japanese Barberry, *Berberis thunbergi*, amidst a planting of arborvitae and roses. Skirting the lily pool and continuing southwest, we find another splash of yellow foliage at the east end of the settling pond along Seventeenth Street. This is the Gray Birch, *Betula populifolia*. A block east of the pond we find a small Ginkgo, *Ginkgo biloba*, decked out in its yellow autumn foliage. Surrounding it are spiny plants of the Devils-walkingstick, *Aralia spinosa*, with orange-red leaves.

Across the road to the northeast, we see the yellow foliage of two large Tuliptrees, *Liriodendron tulipifera*, clothed at their bases with the reddish masses of the Colorado Redosier Dogwood, *Cornus stolonifera coloradensis*. In the same planting we find the shrubby, bronze-red Gambel Oak, *Quercus gambeli*, another native of Colorado.

Along the drive leading back to the museum we find a Northern Red Oak, *Quercus borealis*, set off by its dark red foliage from the American Planetrees, *Platanus occidentalis*, along the drive. A short distance north there is a small European Euonymus, *Euonymus europaeus*, with its unusual pink foliage.

Passing by many evergreens in attractive groupings we return to the museum where we find another planting of Redosier Dogwood south of the building. To the east we see the reddish-purple foliage of the Nannyberry Viburnum, *Viburnum lentago*. Clusters of black fruit also make this shrub attractive. East of the viburnums are several large clumps of Smooth Sumac, *Rhus glabra*, which is the last plant on our "fall color" tour. It is far from the least, for it boasts showy scarlet fruit and bright red foliage.

We have covered but a few of the plants on the lists of trees and shrubs valued for their fall color, but we are fortunate to have these plantings in City Park to contribute to the beauty of the Botanical Garden. As we mentioned before, we must also consider the fall effect of the evergreens of which the Colorado Spruce, *Picea pungens*, and *White Fir, Abies concolor*, are the most common. The crabapples seldom produce colorful fall foliage, but there are a great many varieties with showy fruit. Other deciduous trees show changes in leaf coloration before the foliage is shed in the fall, but the changes are such that the tree does not gain in landscape value.

We look forward to a great increase in fall color in the Botanical Garden as new plantings are developed. Many of the very colorful plants will be added. Maples, viburnums, birches, and others will be added to bring their bright reds and yellows to our autumn display. As the extensive crabapple collection matures, we will be rewarded with a fine fall fruit display. A mountain-ash collection will bring similar rewards. To these we will add the few plants such as the Common Witch-hazel, *Hamamelis virginiana*, which blooms in the fall.

Part of the planning for a botanical garden is a consideration of the landscape effects of the plants, and fall color is an important one. The shrubs selected for planting on the home grounds can add much to the garden view in the fall and winter months with proper planning. It is not essential to have an evergreen planting for attractive landscape. Deciduous shrubs can make a changing picture as the seasons progress, with the new

foliage and flowers in spring, the fruits in summer, colored leaves in fall, and interesting twig effects in winter.

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By so labelling your products you also would assume leadership which might be followed by others.

Cordially yours,
J. V. K. Wagar

P.S. I write this as an open letter in the GREEN THUMB because its appearance here gives the approval of the Colorado Forestry and Horticulture Association, whose members are greatly interested in keeping Colorado beautiful.

Editor's note—While we agree with Mr. Wagar's suggestion, we would like to acknowledge the effort that is being made by beer companies like Coors to promote good roadside manners by their support of the National Keep America Beautiful Committee through the United States Brewers Foundation. Their regional representative Mr. Frank Dawson is at present laying the ground work for a Keep Colorado Beautiful Committee. It is hoped that this committee will be organized and ready to launch an effective state wide anti-litter campaign early next spring.

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THE CORKSCREW WILLOW

FOR once the English name of a plant is very descriptive and to the point. This is the screwiest tree in history. The branches actually corkscrew into the sky and "Cisco" the collie, with his straight legs and upright ears is a geometrical picture compared with Mr. Salix. The tree is not too hardy. This one has a damaged bark but I am inclined to think that cuttings from it might prove hardy. The tree is in Washington park south of the middle tennis courts. I do not know the specific name, but it has been growing at this same spot for several years.

S. R. De Boer

A still day is the safest and most effective time to dust or spray. If there is a breeze, stand with your back to it so the spray or dust blows away from you. Avoid breathing in these materials. If any happens to get on the skin, wash it off thoroughly.

An equipment show that should be of interest to our readers will be held at the Wellshire Country Club September 11th. This show is sponsored by the Golf Course Superintendent Association and will feature demonstrations and displays of every type of lawn grooming equipment imaginable.

NEW MEMBERS IN AUGUST, '56

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Mrs. Jack Liles
Mrs. Edward Pierson
Mr. and Mrs. D. R. Schultz
Paul F. Goldsmith
Elaine Brown Campbell
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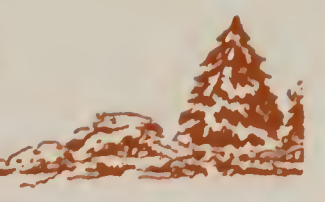
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The Green Thumb

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The Green Thumb

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The Green Thumb

Vol. 13 OCTOBER - NOVEMBER, 1956 No. 9

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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Calender of Events

November 5—"Fun With Flowers" first Monday of each month, Garden Center, W. Alameda Avenue and Kalamath Street. 10:00 a.m.

November 12—Botany Club meets the second Monday of each month 7:30 p.m., Horticulture House.

November 14—Organic Garden Club meets the second Wednesday of each month, Horticulture House, 8:00 p.m.

Green Thumb Program—9:00 a.m. each Saturday, KLZ 560 on your Radio dial. Pat Gallavan, Horticulturist, with Dale Morgan.

ERRATA for September 1956 issue:
P. 30 in *A Few Bits of Denver Park History*, McClellan Gate should be *McLellan* Gate.

PATRICK J. GALLAVAN *Editor* MRS. HELEN FOWLER *Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. GILBERT SAUER, *Custodians*

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THE COLORADO FORESTRY AND HORTICULTURE ASSOCIATION
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1355 Bannock Street • Denver 4, Colorado • TAbor 5-3410

EDITOR'S NOTE

In thumbing through recent issues of The Green Thumb, one thing, conspicuous by its absence, is an up to date listing of our Board of Trustees. Our apologies for this oversight. We assure you, that it is isn't because it has been inactive. As a matter of fact, the Board has had a busy season of it, keeping the operations of the Association on an even keel. A Board meeting has been held each month with an average of 18 of its 33 members in attendance. Their enthusiasm and dedication to the Association is reflected in the success of many of our endeavors such as the plant auction, the garden tours, and The Green Thumb itself. Thus it is by way of a salute that we list their names in this issue. We would like to call your attention to the six members that have been added from outside the metropolitan area. This change was effective at the last annual meeting in keeping with our aim of having an active state-wide organization.

Terms Expiring 1959

Mrs. Henry J. Conrad
Mrs. Charles R. Enos
Mrs. Henry McLister
Mrs. James J. Waring
Mrs. Claude Maer
Dr. Moras Shubert
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Mrs. John Newman
Mrs. Don E. Vestal
Mr. John Swingle (deceased)
Mr. George Beach
Fort Collins, Colorado
Mrs. Stanley Johnson
Parker, Colorado

GREEN THUMBS

By Dorothy Claus

My Mommy says,
My Grandpa-pa has "green thumbs"
And do you know
That's what makes his garden grow?
But what I can't seem to figure
His thumbs are just like mine only bigger!

The above was sent in by Mary Taylor who in turn had it given to her by a friend.

IN MEMORIAM

JOHN W. SWINGLE 1907-1956



In the sudden death of John Swingle, Tree Surgeon, on October 28th in Denver, the Colorado Forestry and Horticulture Association lost one of its most faithful and valuable friends. We will miss and mourn him for years to come.

John Swingle had so many talents, in addition to his professional skills, and so many facets to his character that he will be remembered by the Ass'n in a variety of ways. He was a wise and judicious man so could give good counsel and was always helpful in solving the problems that arose at Horticulture House. He was generous in giving both time and money to The Green Thumb. At some point in his career he had made a hobby of auctioneering and many of us will never forget the gay afternoons spent in laughing at him and with him as he sold, using the approved patter, the plant material and Antiques at our benefits. The Association's debt to him is indeed considerable!

I think it can also be said that since his arrival in Denver in 1947 the standards of Tree Surgery have risen perceptibly thanks to the influence of his knowledge of the profession and the integrity of his work.

His firm was very successful and his name became known throughout Denver. This reminds me of an anecdote from my own experience. For a number of years I taught the Junior Forester Course in the Public Schools. After each demonstration there came a period supposedly for questions on the part of the children. But they preferred to tell rather than to ask. One fourth grade lass recounted, (I quote)—"Oh, our tree was so sick and then Swingle came—"

Over and above the routine work, he maintained a laboratory at 3830 Adams St., where, with his colleagues, he made studies of plant pathology, the new insecticides, and modern techniques in tree care. He was a director on the board of the National Shade Tree Conference and Trustee of the Botanical Gardens Foundation in Denver. The firm will be continued by Earl J. Sinnamon.

—Charlotte A. Barbour

Mention The Green Thumb when you buy from our advertisers—they will appreciate it and so will we!

HAROLD D. ROBERTS — A TRIBUTE

MR. AND Mrs. Roberts have been members of the Colorado Forestry and Horticulture Association since its organization and have helped in its activities. On several occasions they presented their beautiful slides of wild flowers at annual membership meetings. In the passing of Mr. Roberts on July 24, no finer tribute can be given than that by Jack Foster which appeared in the July 26th Rocky Mountain News and which is presented in parts as follows:

"Many were the people Wednesday who were talking about the great gift Harold D. Roberts made to Denver through his practical approach to the water problem.

"But I am going to write a few words about another side of Mr. Roberts' life. His hobby. The color photographing of Colorado flowers, especially our mountain flowers.

"There I knew him best. For, like him, I always have found my solace, my escape from the hammering of the hours, in the out-of-doors.

"Mr. Roberts with his constant companion, his wife Rhoda, were pioneers in the use of color photography in Denver. When Kodachrome was developed in the late 30s, they saw immediately the immense possibility of bringing Colorado's beauty into the living room.

"With tripod, camera, and film they began a project of photographing every flower in Colorado, and I suspect they finished their assignment. At any rate, in their pleasant home on 18th Avenue they have filed away thousands and thousands of slides.

"Mr. Roberts was the picture taker and Mrs. Roberts the photographer-helper and botany assistant.

"They were a wonderful team. Those who were privileged, as I have been, to see the lovely flower pictures flashed on the screen, to hear both of them almost at once describing their adventures in taking them, knew that here was one of those rare and blessed companionships.

"To tramp the fields and hills together, to join in a common hobby, to become excited together about little and beautiful things—these are the matters that make life important and marriage enduring.

"When one can look back on a companionship such as this, death, which came to Mr. Roberts Tuesday, is not the sharp sword that it might have been.

"As I thought of his passing this morning, I pulled from my office book shelf the exquisite book, 'Colorado Wild Flowers,' that was published by the Denver Museum of Natural History.

"He and Mrs. Roberts had prepared this, and the extraordinarily good color plates were made and printed by Bradford-Robinson. It is a small book that anyone who is in love with the Colorado out-of-doors must have."

FRED R. JOHNSON

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Arrangements for the Months of October and November



"The Headless Horseman" is the title of this unusual arrangement by Mrs. R. L. Roper, who entered it last fall in the dried arrangement show put on by the Home Garden Club. The main feature is an odd piece of wind scultured wood that Mrs. Roper said resembled a skeleton of a wolf's head when she found it. It forms an erie backdrop for this theme on the Legend of Sleepy Hollow. In making up the display, she anchored red cockscomb *(Celosia)* on to the wood with reindeermoss *(Cladonia rangiferina* at its base. The little ceramic figure is the headless horseman, of course. A grey porcelain horse is mounted by a figure made of black broadcloth with a ceramic pumpkin head peeking out from under the cape.



The arrangement on the lower left by Mrs. Ray Turnure, uses for a base a real pumpkin that can be hollowed out and filled with water or the flowers may be just pushed into the pumpkin using only the natural moisture of the meat inside. Here, fall colored oak leaves and white shata daisies with yellow centers are combined, contrasting nicely with the orange of the pumpkin for a colorful fall bouquet.

Pictures by Ray Turnure

"WHERE THERE'S LIFE . . ."

By Kenneth W. Chalmers
State Conservationist, Soil Conservation Service, U. S. Dept. of Agriculture

WHEN our Green Thumb Editor asked me to report to you on soil conservation developments in Colorado, I was torn, as I always am, between an urge to boast a little about the things we have accomplished and the opposite urge to point out our shortcomings. One thing is certain, we need only visit some of the other states to realize how much our clubs, societies, farmers and ranchers, state, local, and federal organizations have done to protect, preserve, and improve the gardens, forests, and farms of our beautiful state. We have united in the drive to protect the priceless nature scene.

In the past 20-30 years, we witnessed an unprecedented growth of public consciousness of conservation—indeed most of us have helped the movement grow. We are a dedicated lot. I know our combined efforts will never be realized until conservation is in the heart, mind, and action of every school child and adult in our nation.

As we come to grips more and more with the job, I am always struck by the widening scope of our approach.

There was a time when the planting of a single tree on Arbor Day would earn the gardener a title of conservationist. Not any more! Science and economic development have created entirely new fields and made conservation specialists out of unheard of side lines of those days. Club members, land owners, scientists, technical men, and a host of "just folks" have rallied for the job. No stone will be left unturned, or to say it better, "no acre left untreated" in our combined effort.

Since I, myself, am only a "novice" in some of the widening aspects of conservation, I feel at liberty to speak only of the side I know best—the work of the Soil Conservation Service.

We hardly recognize our job in SCS when we look back on the early years. It was a matter then of a few contour lines and simple practices. We were more self-confident than able.

SCS has stood for progress, change, and development. Even in the past five years our responsibilities have grown so that we feel like a "new father." Yet we accept these challenges with virtually no change in our Colorado staff.

SCS supplements the conservation forces of the Forest Service, Game and Fish Department, Reclamation and Land Management Bureaus, the statewide county conservation payment program and the much respected A & M College Extension Service. The Service brings together a staff of trained conservationists to solve land and water problems. This staff of 325 includes conservation technicians; soil scientists; agricultural, irrigation, drainage, hydraulic and cartographic engneers; and specialists in woodland, biology, range management, plant materials, geology, and sedimentation.

Perhaps many of Green Thumb devotees have known SCS for many years but have never fully understood our job. Let me report that SCS:

1. Develops and carries out a national soil and water conservation program through soil conservation districts formed and managed by local farmers and ranchers.

2. Carries out the USDA's responsibilities in watershed-protection and

flood-prevention projects and river-basin investigations.

3. Assists in the application of the National Cooperative Soil Survey.

4. Plans and applies measures and practices that reduce flood damage in 11 major watersheds.

5. Helps develop the annual Agricultural Conservation Program, gives technical assistance to farmers and ranchers participating in the cost-sharing provisions of that program, and provides designs and specifications for the jobs undertaken.

6. Gives technical assistance to farmers and ranchers participating in the conservation-credit program of the Farmers Home Administration.

7. Supervises the agricultural phase of the water-utilization program in the Western States.

8. Makes and coordinates snow surveys for water forecasting in the Western states.

9. In addition to its responsibilities on the newly enacted "Great Plains" drouth program, furnishes technical aid for the "Soil Bank Program."

The Soil Conservation Service gives on-the-farm technical assistance to farmers and ranchers in planning, applying, and maintaining conservation systems. Assistance is given some 100 soil conservation districts organized and managed by farmers and ranchers under State law.

Last year the Service gave on-the-farm assistance to about 1,200,000 individual farmers and ranchers throughout the nation. Assistance to these individuals included:

1. Preparing a soil and land-capability map based on a detailed acre-by-acre survey of the farm or ranch.

2. Helping the owner prepare a plan to provide for the use and treatment of the land according to its need and capabilities as revealed by the survey, and in accordance with the decision of the individual. The conservation plan includes recommendations for land use and soil and water management and for conservation and use of cultivated land, grassland, and woodland.

3. Assisting in the application of practices in the conservation plans, such as field layouts and designs as well as supervising construction of drainage leveling, irrigation systems, farm ponds, terrace systems, diversions, and waterways.

The Service administers the Department's upstream-watershed protection and flood-prevention activities as an integral part of the conservation job. This involves working with local organizations that sponsor watershed projects, and with individual land owners and operators in watershed project areas. Assistance to these includes:

1. Helping them prepare a watershed work plan.

2. Designing and assisting in the construction of watershed protection and flood-prevention measures.

3. Helping watershed land owners plan, apply, and maintain farm and ranch conservation systems.

4. Administering the federal part of the cost-sharing provisions.

The job goes on!

Here in Colorado, we have more than 16,500 active farmer-rancher cooperators who operate some 15,000,000 acres of land in an even one hundred Soil Conservation Districts; 9 watershed work plans and 425 group drainage or irrigation jobs. Our men have made detailed soil and range site surveys on nearly 10,000,000 privately-owned acres.

Within the era of accurate record keeping we have amassed some staggering totals of works accomplished. Each year shows a substantial rise in conservation practices accomplished as we develop efficiency and adopt new methods. In the fiscal year ending in July of this year, we added to Colo-

rado's store house of conservation practices, 125,000 acres of irrigation water management, 40,000 acres of new grass seeding, 80 miles of canal and ditch lining. We did field layout design and construction supervision on 30,000 acres of land leveling, 1,900 farm ponds, 4,000 acres of field drainage, several thousand irrigation structures, and some 500 odd diversion dams. Coupled with these are totals too lengthy to report on stubble mulch farming, crop rotation, contour furrowing, range grass improvement, ditch construction, wildlife area improvement, and stream bank stabilization.

LITTERBUGS AND TRASHBUGS

A gorgeous blonde in a spiffy Jaguar on the way to Central City made herself quite unpopular the other day with the occupants of the cars following her.

First she threw out a torn-up loveletter the scraps of which landed in the lap of the driver following. Then followed, in succession of two minutes, the wrappings of an old cigarette case, those of a new one, a half-burned, still smoking cigarette, and finally a half-used match holder. We were truly glad she and her companion were not drinking beer just then: we might have been hit with the thrown-out beer cans for no attention was paid where said objects landed.

The same afternoon we happened to see a National Park pick-up, whose driver was occupied in picking up the trash that had been thrown out by similar blondes, brunettes, and mere men. Somewhere on our tax bill we pay for the salary of that driver.

Unimportant? Yes, and no. The table of multiplication is still in force and results along our highways prove that a little litter now and then creates a mess disliked by men (and women).

Many of our National Parks now dispense a Trash Bag together with information about the Parks. It says:

THIS IS YOUR TRASH BAG

> Please use it as a container for your waste paper, tin cans, bottles, and other debris, and deposit it or empty it in one of the trash cans provided for your convenience.
>
> Trash along roadsides is a national problem. You can help solve it by carrying and using containers similar to this *wherever* you may travel.

'Nuffsaid! Do you think Horticulture House should furnish, free of charge, a similar line of trash bags? M. W. P.

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BIOLOGICAL CONTROL OF KLAMATH WEED

By Samuel B. Detwiler



KLAMATH weed, otherwise known as common St. Johns-wort, originally from Europe, is a noxious weed that has become established in Colorado and other Western states. It reached California as early as 1900 and then spread over nearly a half-million acres of range land despite annual expenditure in recent years of around $400,000 for chemical and manual control measures.

The first really feasible control of klamath weed, *Hypericum formosum,* in California was in 1946-'47 through the release of two species of *Chsysolina beetles* that feed only on the foliage of klamath weed, harming no other vegetation. Such biological control of weeds through encouragement of specific insect or fungus enemies of undesirable vegetation is a relatively new idea, and is apt to be used increasingly more as plant scientists study and test such measures.

Biological control of pests, being done mainly by Nature, is an inexpensive control method. However, the danger of doing harm in unexpected ways makes it apparent that it can be used only after long and thorough testing of the method under strict precautions and controls. Before the klamath weed beetles were released in California, there were 27 years of intensive study and experiment abroad to make certain that the beetles would destroy the St. Johns-wort and not harm other plants or animals. After the beetles were released in California and Oregon, it took several years to determine how well the insects would survive and increase under their new environment, different from conditions in their original home in southern France. But today it is certain that the beetles are effective in California and Oregon, and indications are favorable for them to be similarly effective against spread of klamath weed in other Western states.

In 1952, Dr. William A. Weber informed the writer that klamath weed was well established on grazing land along State Highway 93, in the Coal Creek - Rocky Flats region south of Boulder. This discovery was reported to the weed control committee of Pleasant View Grange, which promptly invited Commissioner Swisher and State Entomologist Gates, of the Colorado Department of Agriculture, to inspect the area and start control efforts. Two days after this inspection, Mr. Gates was enroute to California to learn details of klamath weed control there, and to arrange for

shipment of *Chrysolina* beetles for trial. From 1952 to 1955 a number of lots of these beetles were released in different parts of the 16,000 acres of weed-infested range land in the Rocky Flats - Eldorado Mountain area. In June, 1956, the first certain proof was found that the beetles had survived and were multiplying well in the area. Hence, the prospects are good that the beetles are adapted to Colorado conditions and will control the weed in due time.

Klamath weed is a herbaceous perennial, sending up several stems, one to two feet high, from a woody base. Masses of golden yellow flowers, about a half-inch across, form a flattened flower head which later bears small, brown seed capsules so plentifully that a single plant may yield as much as half a cupful of seeds. The tiny seeds are so light in weight that they are readily blown about locally by strong winter winds. In addition to the prolific production of seed, the woody base of the plant sends out runners, explaining why the klamath weed is able to quickly take complete possession of grazing lands on which a stray plant has become established. Also, this plant thrives exceptionally well on dry, gravelly or sandy soils, on rocky slopes, and under shade of open forests, typical of vast areas of Western ranges.

Klamath weed can be killed with chemical sprays, but the cost is prohibitive on most range-land areas. Hence the biological control of this weed is of decided interest to conservationists generally. It is instructive to consider the fundamental idea back of biological control measures.

Biological control of weeds, insects, and plant diseases is really practical application of the principles underlying plant and animal ecology. Foresters were the first technicians to apply ecological principles in producing an economic crop by wise use of the soil. Today, soil conservationists are learning many ways to put ecological knowledge to practical use on the land. Farm journals over the past few years have reported details of agro-ecology applied in the production of corn and other annual row-crops. There is sound sense in a statement recently made by Colin Marshall, Conservator of Forests in Malaya. He says:

> "The need for National Scientific Boards to examine from the broadest ecological aspect all budgetary and legislature proposals of governments, and all the needs of their people, is becoming increasingly recognized by the wisest leaders of mankind"



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ASPECTS OF GARDEN DESIGN

By Curtiss Pollari

This is the first in a series of articles concerned with the design aspect of gardening. It is hoped by the author to create interest in the subject and give people more information on the various factors which influence the design of out-of-door living areas and gardens.

DESIGNING areas for human enlightenment is an old age institution. Ever since man has been on earth he has sought to modify his environment. Today he still seeks to do so. Therefore, gardens, more particularly livable areas surrounding the house, have come more and more to the fore.

There are several factors to be considered in solving any problem; landscape design is no exception. New homeowners, also those whose gardens have grown like Topsy, should take stock of their surroundings. They should judge if their landscape design is adequate for their needs. What exposure is the handiest from the interior of the house? How does the ground slope? Can the situation be developed with relatively little effort or must there be soil brought in and retaining walls constructed? How much and what type of entertaining is planned for this or any other area to be developed? Will it be simple relaxing, or dancing and other active recreation? Does the sun shine in a particular area at the time of day desired or must a trellis be built or a tree planted to modify the exposure? And at what time of year will color from the shrubs, trees, flowers, and vines be most desirable?

It must be decided whether it is to be a garden for avid gardners or whether it will be only for weekend gardeners. Perhaps there is some special flower to be featured. If there are children, it will be necessary to allow for changes through the years. A ten-year cycle seems to parallel the desires of growing children, but a final plan should be drawn and modifications made as the children grow and their needs change. Naturally there are many more special questions to ask as an inventory of requirements is made.

It is wise, and a necessity for sound planning, to set down the size and shape of the property. List all of the functions expected from this parcel of space: further, allocate special areas within the parcel for different activities. Clothes drying, service, vegetables, lawn and flowers, hedges and paving, or terraces, are special areas to be incorporated into a pleasant arrangement.

Reasons governing the plan may at first seem obscure. Why should the terrace be next to the open lawn and flowers? Why should a screen be installed—these "whys" appear difficult to answer. It is here most poeple exhaust their patience and become frustrated. But bear in mind that this is a first attempt in so many instances. Higher skills are not learned with just one lesson. Designing areas of land for human enjoyment is no different in this respect. The homeowner must systematically analyze his problems. He should be guided with ideas gathered from gardening magazines and all the "tips" received from nurserymen and county agents and other sources of information. After an analysis is made, he should then define the solution or solutions on paper in the form of a plan. In doing this he would be wise

to buy a roll of inexpensive tracing paper to try various changes in arrangement. At first there might appear to be many solutions, but further examination will "weed out" many. Ideas placed on the various plans should never be thrown away until a satisfactory solution to the problem is attained, for these attempts are good for reference purposes.

One of the best ways of testing a solution tentatively accepted is to stake it out on the lot. This involves a few minor needs at most—a ball of binder twine, a few stakes, the garden hose (for curves), and a desire to truthfully judge whether the design functions. The "whys" are more easily answered by this process. Then if it doesn't function, perhaps by moving the line of the walk one way or the other, or by raising or lowering a wall or rearranging any of the hundreds of parts of the design, a solution will be found. But it must not be rigidly confined by pictures seen or by the things that have been read or heard—the imagination must be open for critically evaluating the handiwork. Bear in mind that each landscape problem is different. It is vitally necessary to be truthful in judging how the things drawn on paper will appear in reality. This analyzation can and should be fun; a challenging experience to everyone for it embraces the interesting fields of horticulture, art, and engineering. A multitude of professions are included in landscape architecture and each has its proper place.

After a solution has been reached, the stakes should be left for a game of pretend for the design should be lived with for a few days. If full satisfaction has not been obtained from all of the parts which make up the whole, another try at rearranging must be made. There is an answer to the problem, however evasive it seems, but one must be persistent in seeking it. Never work too long on the plan at one time lest the enjoyment of this new experience wear thin.

Designing gardens is fun as any landscape architect can testify, and 'though he is trained to solve these problems, there is no reason why he should have all the fun!

Though probably there always have been wild strawberries in this country, the progenitors of the luscious garden strawberries we know today first came from Chile in the early 1700s. The Latin name is Fragaria, meaning fragrance, from the mouth-watering aroma of the fruit.

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THE WHY AND HOW OF HUMUS PRODUCTION

By Dr. A. A. Hermann

To achieve the maximum of size, beauty, and generous production of flowers on any plant it must be happily potted in soil whose texture and fertility have been enhanced by the labors of repeated and frequent addition of humus and the chemical elements essential for luxuriant growth.

Nature unassisted and not too drastically interfered with, can and does build up a blanket of humus into which the tiny rootlets of the sprouted seed can get a foothold and grope about for additional nutrients as growth progresses. The successive seasonal shedding of foliage builds up this storehouse of plant food. Liberal financial ability enables man to purchase humus in attractive bags, a flowerpotful for a quarter or $6.50 for a cubic yard, which is usually good and it is efficaceous if intelligently used.

But it is quite a satisfaction to produce your own humus for the next season by processing the residue of spent blooms and stalks, lawn clippings, and fallen leaves—in fact, everything that is discarded each autumn time. All such material may be placed in an inconspicuous corner at the rear of the lot, or put into a barrel or large box or into a square or circular pit a couple of feet to six feet deep. If discarded fruit and vegetable tops and peelings are added, they should be immediately covered with a little soil taken from one end. Reasonable moisture generates heat essential to the more rapid conversion of the material into available humus. Plunge your hand into a 24 hour old pile of lawn cuttings and you will find it almost unbearably hot. This heat destroys the noxious seeds of crab grass and other plant life, but not the food value.

After the annual application of generous quantities of such leaf mold on your flower beds for five years, the texture of the soil can be improved to such an extent that soil plowed early in the springtime is still so friable in September that large handfuls may be readily scooped up even if there has been no subsequent cultivation. If it seems necessary or advisable to hasten leaf mold or humus conversion, nothing is more economical than the addition of some nitrogenous compounds. Many brands and varieties of humus activators are widely advertised for sprinkling on leaf mold or compost piles. Many of them are over rated, over priced, and superfluous. However, one may advantageously use one pound of Viturea, a 45% nitrogen compound; ammonium nitrate, a 33% nitrogen compound; or 2 pounds of ammonium sulphate, a 21% nitrogen compound. Mix with 10 gallons of water.

Such compost moisteners may be used in the pit or on the pile two or three times during the season and will enhance the value of the humus since these products are reputable and economical forms of plant food.

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WINTER PROTECTION OF ROSES IN COLORADO

By Clyde Learned

For winter covering of rose bushes you have all seen pictures in the rose instruction books of nice bee-hive-shaped earth mounds. These mounds with their steep-sided slopes look very efficient at the time you pile them up, but take a look at them in the early spring. By that time they have usually sloughed or flattened out so that they look more like thick pancakes, the thin cover of which does not afford too much protection to the rose canes and roots during a really tough Colorado winter.

For more positive winter protection of rose bushes it is suggested that earth-filled open-end cylinders be used. The cylinders are made of galvanized hardware cloth, four meshes to the inch, are six inches high, and of varying diameters ranging from 10 to 12 inches.

By varying the diameter it is possible to nest five cylinders to facilitate summer storage.

To form the cylinders, six-inch strips of hardware cloth are shaped into a circle and fastened at the ends with three 4-pound galvanized tinner's rivets which are a little over 1/8 inch in diameter and 3/8 inches long. The ends of the hardware cloth are overlapped three meshes or 3/4 of an inch, the rivets being placed and flattened in the middle mesh.

A 100-foot roll of hardware cloth 24 inches wide will make about 132 cylinders 6 inches high.

The roll is cut into 6 inch wide strips as follows:

10 inch diameter cylinder 32½ inches long.

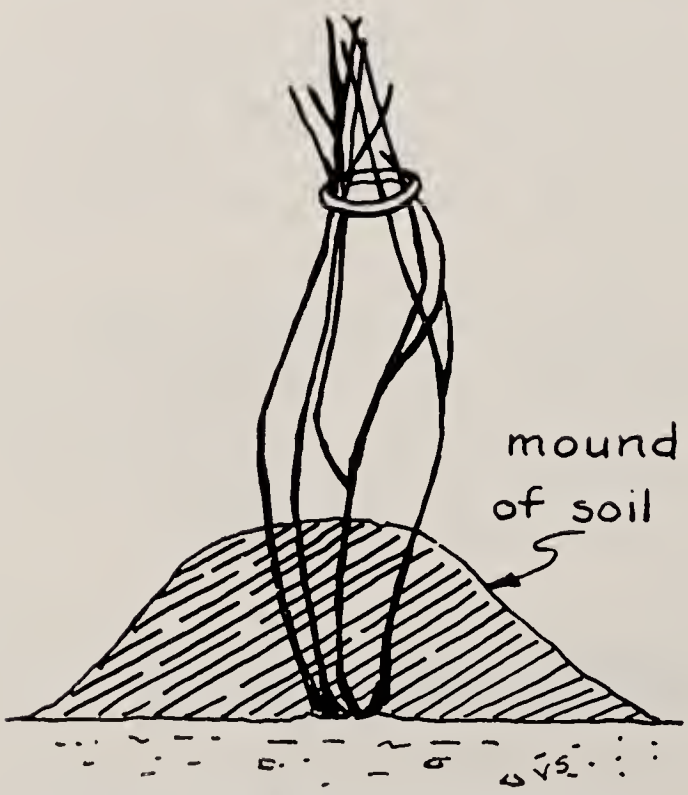
10½ inch diameter cylinder 34 inches long.

11 inch diameter cylinder 35½ inches long.

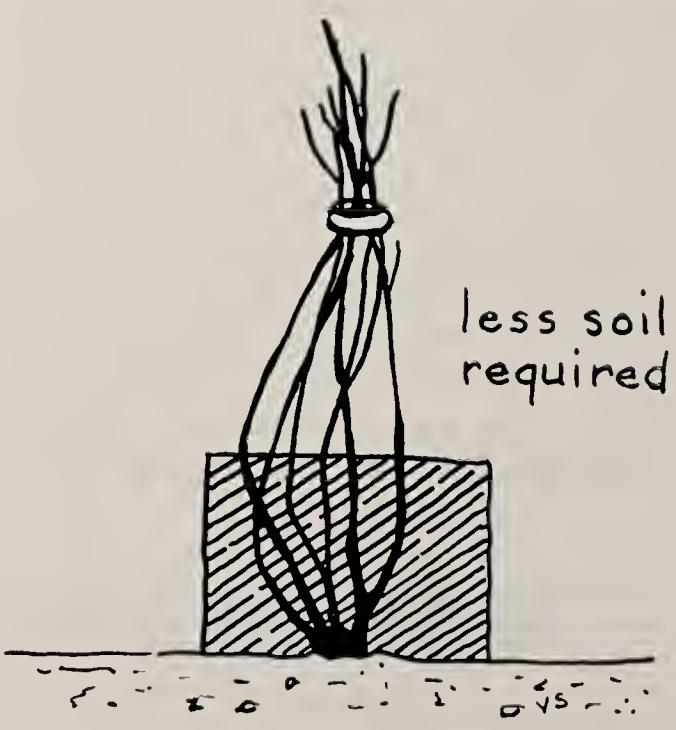
11½ inch diameter cylinder 37 inches long.

12 inch diameter cylinder 38½ inches long.

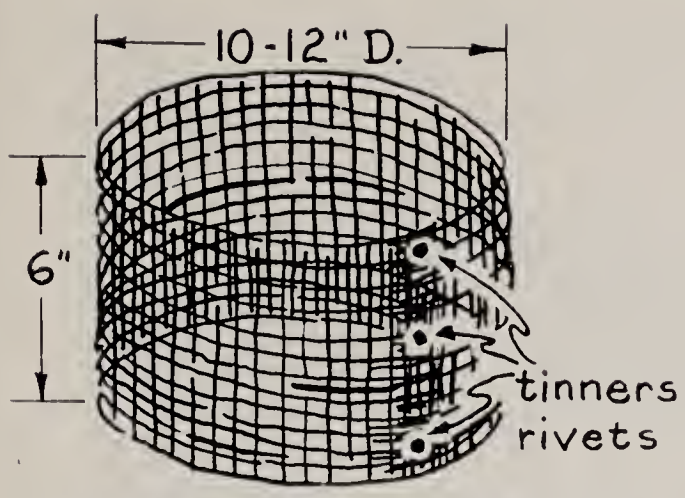
The cost of the cylinders will range



Conventional method of mounding roses.



Clyde's method of mounding roses.



Sketch showing how to make wire mesh cylinders.

from 16 to 20 cents each, depending upon the price paid for the roll of hardware cloth.

In the late fall to prevent cane breakage by high winds and heavy snows, the tops of the canes are tied together with cord making it easy to drop the hardware-cloth cylinders down over the bush.

The cylinders are then backfilled around the canes with a sandy loam or other suitable material. It requires only about one-half as much material to backfill the cylinders as would be required for an equivalent height of unretained mound, and a much more positive protection is given the rose bush.

WINTER STORAGE OF DAHLIA BULBS

Mrs. W. C. Crites of 4274 South Huron has given us a rather unusual method of storing dahlia tubers over the winter. She says:

"After the first frost, cut back the stems to four inches. Dig and thoroughly wash off all soil with a hose. Then, saw or cut the tubers into planting size, discarding small or undersized ones. Always leave a bit of the original stem on each."

"Next, melt ordinary canning paraffin in a container at least four inches in depth and large enough to cover the bulb. Dip each tuber until it is thoroughly covered with the paraffin. Let the paraffined tubers cool and then pack them in cardboard containers for storage in a cool, dry place — basement preferred — until spring planting time."

"At planting time cut a small portion off the root end of the tuber in order to let in the moisture for growth development."

"We have found this method most satisfactory in the arid climatic conditions of Colorado because the paraffin keeps the tubers from shriveling as well as protects them from insect damage."



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LOOK AND LEARN GARDEN VISIT REPORTS

Not unlike the Saturday morning quarterback, your Look and Learn Garden Tour Committee recently met to review the past summer's program. By way of statistics, they came up with the following: 28 gardens were shown, 550 persons visited these gardens, and $470.00 was realized from these tours. These figures, when compared to previous years, show that this season was slightly above average. However, the committee was not completely satisfied with this showing, particularly from the standpoint of attendance. Their feeling as to the value of these tours is summed up as follows: Education-wise, these tours can and should serve an important function within our community in that they show many of the excellent gardens in the metropolitan area which are shining examples of what can be accomplished in this different and difficult horticultural area. These beautiful gardens, coupled with the area's experts conducting the tours, give the visitor a positive insight into the possibilities of a mile-high garden. With this deep conviction, they sat back down and discussed, both pro and con, all the many details of putting on these tours. When the meeting finally adjourned, they had come up with many new ideas, and more important, a definite plan was evolved that should make next year's tour the best ever.

Getting back to this summer's tour, we have a good many things to reminisce about. The weather cooperated beautifully. All four tour days were clear and pleasant. We had to gamble a bit in predicting the date for the best bloom for iris and roses. We won on the iris, seeing them at their peak May 27th. However, we missed the roses by a week or so in June. Luckily the last two tours were for annuals, perennials, and landscape features so that we didn't have to outguess the weather on those.

Along with the nice weather, the gardens were in tip top shape and we're sure from the enthusiasm of those attending the tours that they were well rewarded by beautiful masses of flowers, well-arranged borders, and unusual garden features and patios. Because of this enthusiasm, we would

like to take this opportunity to publicly thank the following gracious people who opened their garden gates to our Look and Learn visits:

TUESDAY, MAY 29th

Mr. and Mrs. Everett Cline
Dr. and Mrs. J. R. Durrance
Mr. Martin Keul
Dr. and Mrs. James J. Waring
Mr. and Mrs. H. G. Housley

WEDNESDAY, JUNE 27th

Mr. and Mrs. L. W. Appledorn
Mr. and Mrs. Roy T. Littlejohn
Mr. and Mrs. Rete Kiplinger
Mr. and Mrs. J. O. Olson
Mr. and Mrs. Boyd P. Kness
Mr. and Mrs. Scott Wilmore

WEDNESDAY, JULY 18

Mr. and Mrs. Lester Thomas
Mr. and Mrs. M. G. Brennan
Mr. and Mrs. C. L. Hubner
Mr. and Mrs. T. E. Best
Mr. and Mrs. F. W. Herres
Mr. and Mrs. Alfred J. Bromfield
Mr. and Mrs. Arthur E. Holch
Mr. and Mrs. Harvey A. Nathan

WEDNESDAY, AUGUST 8th

Mr. and Mrs. Kent M. Hutton
Mr. Waldo E. Rennie
Dr. and Mrs. Edward J. Swets
Mr. and Mrs. George R. Cannon
Mr. and Mrs. J. Kernan Weckbaugh
Mr. and Mrs. John W. Hyer
Mr. and Mrs. Edwin H. Grant

We would also like to extend our thanks to the many friends and members who served as experts and hostesses this past season. And an extra special thanks to those who served more than once.

EXPERTS

Mrs. Charlotte Barbour
Mrs. Harvey Butterfield
Mrs. William Crisp
Mrs. H. G. Housley
Mrs. C. S. Jones
Mrs. Russel Myer
Mrs. John Newman
Mrs. Myron Nixon
Mrs. Bernice Peterson
Mrs. Ray Turnure
Dr. Helen Marsh Zeiner
Mr. George Amidon
Mr. Jack Bolton
Mr. Stanley Brown
Mr. Glenn Clayton
Mr. James Dixon
Mr. Patrick Gallavan
Mr. Henry Gestefield
Mr. Kean Griffith
Dr. A. A. Hermann
Mr. Ed Johnson
Mr. Wendell Keller
Mr. Martin Keul
Mr. Clyde Learned
Mr. Robert Monger
Mr. John O'Brian
Mr. M. Walter Pesman
Mr. Claire Robinson
Mr. Gilbert Sauer
Mr. Kenneth Wilmore
Mr. Mike Ulaski

HOSTESSES

Miss Elizabeth McNary
Mrs. Carl A. Almquist
Mrs. Don F. Alysworth
Mrs. Frank Brady
Mrs. Henry P. Broadhurst
Mrs Edwin H. Grant
Mrs. Hugh E. Golder
Mrs. Kean Griffith
Mrs. E. H. Honnen
Mrs. Albert E. James
Mrs. Clarence Jones
Mrs. H. M. Kingery
Mrs. Clyde Learned
Mrs. Robert Lehman
Mrs. Leon Lippard
Mrs. Lester Engel
Mrs. Karl Eppich
Mrs. Irene Felt
Mrs. Roscoe Fleming
Mrs. Downey Fuller
Mrs. Lewis C. Loeb
Mrs. Robert E. McCurdy
Mrs. Frank McLister
Mrs. Ray Naylor
Mrs. W. L. Newmeyer
Mrs. Arlie Page
Mrs. Andrew Riggs
Mrs. Howard Robinson
Mrs. Thomas Shomberg

HOST

Mr. Clyde Learned

And it goes without saying that the hard working Look and Learn Garden Tour committee deserves a special bouquet for organizing and executing this season's wonderful program. This committee was composed of the following members:

Mrs. H. M. Kingery, Mrs. Frank McLister, Mrs. Robert McCurdy, Mr. Pat Gallavan, Mrs. Rose Hughes, Miss Elizabeth McNary, Miss Melanie Brown, Mrs. Henry McLister, Mr. James Stuart and Mrs. Charlotte Barbour.

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DON'T FENCE ME IN

By Robert Woerner

Perhaps you don't share our claustrophobia complex, but we can't seem to abide these fences that abound in our neighborhood. Not that we are fence-haters, but it seems there are just too many chainlink or basketweave enclosures dividing the block into legal dog runs. We stood firm against the persuasive arguments of the selesman and enjoyed the wide open spaces (and a goodly portion of our neigrbor's yard) all summer. We were impressed by the effectiveness of a nearby fence. It slowed the three-year-olds down for about thirty seconds, and proved to be an even more effective barrier for the pursuing mothers, who had to go the long way around to retrieve their errant offspring.

Enough of this pleasant banter. We're not really against fences. We even have one in our yard, but we like to think of it as our "friendly" fence. Actually, one section of the fence serves to screen off the service area from the front of the house. We feel that this will be appreciated by our friends across the street who have been forced to gaze upon our clothes poles, incinerator, and compost heap these many weeks. A second section extends from an evergreen hedge to the property corner to complete the feeling of enclosure required by our landscape plan. This section, which is along the back property line, includes a gate so that we are free to amble through to borrow our neighbor's garden tools or engage in a bit of community hoe-leaning.

The most important thing about our fence is that we built it ourselves. If you are in the do-it-yourself mood, you could build a similar fence for the reasonable sum of $.64 per foot! Ours is redwood, with 4x4 posts. A 1x6 top rail was set at a height of 42 inches. Below this, we crossed two 1x4 members diagonally and finished off with two parallel 1x6 bottom rails. An 8 foot section required three pieces of 1x6 redwood lumber 8 feet long, two pieces of 1x4 lumber 8 feet long, and a post 6 feet high and 4x4. We had the posts milled at the lumber yard, with two slots in the intermediate posts, and one in the gate posts. The lumber yard also lent us an auger and this is where the fun began.

After stretching a string line to define the path our fence was to follow, we staked off the post locations and bored away with the auger. It worked fine until we struck some small rocks embedded in the clay. These had to be dug out by hand. If you contemplate such a project in sandy or rocky soil, we strongly recommend the good old two-hankled post hole digger.

With the holes dug to a depth of 30 inches, we proceeded to set the posts filling in around them with concrete. A half a yard of bank-run-gravel and a sack of cement were sufficient for ten posts using a mixture of one part cement to five parts sand and gravel. The end ones were set first using a level to get them plumb in both directions. A string between them served as guide to get the rest into line. With all the posts in place, we took a three day rest to allow the concrete to cure.

Working from top to bottom, the fence was assembled by sawing the rails and cross pieces to length and dropping them into the slots mentioned above.

The bottom rail was nailed in place 3 inches above the ground surface. A 3 inch space was left and the second

lower rail was secured. The top rail was put in place temporarily at a height of 42 inches and the posts were marked. Next the cross pieces were measured to fit diagonally between the bottom of the top rail and the top of the second rail, then were cut to length and dropped into place. The top rail was added and nailed to the posts. We used galvanized nails to avoid rust stains and, to prevent splitting, took the extra precaution of drilling the nail holes in the boards before they were toenailed in place.

The fence has been satisfying to us, perhaps because we did it ourselves, and because it is original. Most of all, we like it because it's a "friendly" fence. It is a project that is not too difficult and can be completed in easy stages. We hope that others who need a fence may find this method an economical answer.

TRANSPLANTING ASPENS

By Henry Gestefield

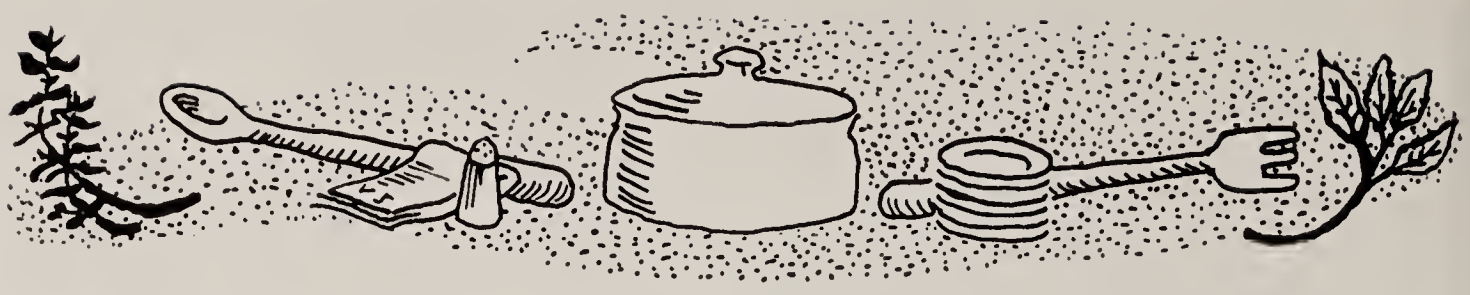
ASPENS can be and have been transplanted successfully, but after they have grown for several years many suckers develop and the trees get to be as much of a nuisance as white poplar.

New trees sprout from root cuttings or root runners from the mother tree which are only a few inches below the ground level. Raspberries, blackberries, and loganberries reproduce in a similar way. New trees will also start from roots bruised by stones, deer or elk hooves, or bruised from the pressure of falling dead trees. Contrary to most popular opinion, it is easy to transplant aspens, but to keep them from suckering, I suggest the following: Dig the aspens late in the fall after the leaves have fallen. Keep the roots wrapped in wet burlap and bring home some mountain leafmold. Before heeling in the trees, make a new cut on the underside but above all bruised spots on the roots and dis-bud 10 to 12 inches of the tree trunk to prevent underground side shoots and suckers. Heel in the trees 10 inches deeper than their original depth. Cover the roots with sand or leafmold to help start new feeder roots. Also make sharp incisions on the underside of the larger root stubs to evoke more abundant feeder roots. Again try not to marr the upper side of the tree roots for this is what starts suckers. If possible, shade the tops of the trees to prevent drying and sunscald.

In early spring, preferably late March, plant the trees where desired. Prewater the hole, put leafmold mixed with sand around the roots, water well, and place top mulch around the trees. Do not trim the branches the first year.

The main "must" is to plant the trees 10-12 inches deeper than the original depth to prevent suckering. Adding a little sulphur to the soil will help to de-alkalize it.

Large aspens up to 4 inches in diameter may be transplanted successfully as follows: In the fall, dig to sever the roots near ground level, hill the trees to 12 inches, and brace the trees so that they won't blow down. In the early spring move the trees down to their assigned position, disbud, and plant them deeper than their original growing depth as instructed above.



ROMANCE, HISTORY AND NOURISHMENT

By MELANIE B. BROWN

The herb becomes the teacher
Men stray after false goals
When the herb he treads knows much much more.
——The Herbarist

A short time ago Mrs. Randall Hughes sent in a recipe on rose hip jam for our herb page which delighted us, for we're always on the lookout for unusual yet *edible* ideas.

We suspect she was inspired by the beautiful hips seen in Mr. Rennie's garden displayed on the last Look and Learn tour, but in any case there was a chain reaction. Mrs. Hughes' recipe started a search through the many fine herb books here at Horticulture House for more ideas on the subject. The project became increasingly fascinating and along with other rose hip recipes, the history and folklore of the flower and plant proved to be too interesting to be left out.

Roses, while used nowadays only ornamentally, were prized for centuries for many things other than beauty. Their history dates back to 350 B.C. when they were first officially mentioned by Theophrastus, the father of botany, in his famous herbal. The rare oil of Dioscorides in the 1st century A.D. was simply roses macerated in olive oil.

The origin and natural habitat of the plant is northern Persia. There, distilled rose water became an important trade item in the 8th and 9th centuries. The 10th and 11th centuries sparked Ibn Sina, better known as Avicenna, a botany student whose Canon of Medicine became so popular between the 12th and 16th centuries and whose rose water was equally famous.

Attar of Roses came later during the Mogul rule in India when Emperor Jehangir was walking in the royal garden with his bride. The legend says that the canals had been filled with roses to celebrate the wedding and as they walked, they noticed an oily film on the surface of the water when the sun was intense. They were so fascinated by the scent of the oil that they had it bottled and so, of course, thereafter, it became the most precious scent of emperors.

In Rome the floors in the palaces were strewn with rose petals, guests were crowned with them, food was flavored with them, and they were floated on wine. Still later, a rose painted on a ceiling in a dining room of a private house symbolised the privacy of the conversation. Hence the expression "subrosa." Later, of course, it lost this meaning.

Provence was famous for its dried rose petals as early as the 13th century. It's inhabitants made juleps and conserves of red roses, considering them very good in medicine. The Provence rose (*Rosa gallica*) is still considered the red rose of medicine. Rose petals contain principally glucose, gallic acid, and quercitrinic acid. Even today they

are used by some people to ease coughs, as a heart tonic, and for the relief of Eustachian catarrh. They are also supposed to help the hearing and incipient hay fever although these last two are probably closer to folklore than medicine. The flavor, however, is widely used in many medicines. Country people in England give conserve of wild rose hips to consumptives and red roses are said to increase retentiveness! An infusion of them can be used as a gargle. Rose water mixed with syrup of mulberries not only tastes good but is supposed to be good for sore throats. The leaves of wild roses are a good substitute for tea and in France roses are used in liqueurs such as Parfait d'Amour. The Turks and Greeks make a delicous conserve copied by other countries and similar to the one given below which was found in Helen Fox's book, *Gardening With Herbs.*

ROSE PETAL JAM—
From Constantinople

Gather petals from flowers that have just opened early in the morning. Petals of the damask rose are the sweetist although *Rosa gallica* or General Jaqueminot may be used. Cut off the white and yellowish base or heel—then wash and drain. To each cup of rose petals take one cup of water and a cup of sugar. Boil until the syrup hardens on the spoon. At just the right moment a little lemon juice should be added and a bit of tartaric acid. If they are not done exactly the right way they are bitter. The jam is poured into little jars and allowed to cool, and the next morning it is sealed with wax.

MRS. HUGHES' RECIPE
FOR ROSE HIP JAM:

2 cups fully ripe rose hips
(best after frost)
4 cups boiling water
2 pounds sugar
¾ pound cooking apples, pared.

Wash the rose hips well, then put into the boiling water. Boil gently till soft, then mash with a wooden spoon. Strain through a jelly bag letting it drip overnight. Measure juice. Make up to 3 cups of juice, adding water to make the full amount of 3 cups of juice, if necessary. Cook apples to a pulp in very little water, then rub them through a sieve. Mix rose hip mixture and apple mixture together. Bring to a boil and stir in sugar and boil rapidly until jelly stage is reached. Pour into sterilized jars and seal.

Another recipe for rose hips from The Herbarist is as follows: Choose a species of rose that has large fruits called *hips* in America and *haws* in England. Remove seeds. Allow half a pint of water to each pound of ripe hips and boil until they are quite tender. Then rub them through a sieve and to each pound of pulp, allow a pound of sugar and boil until it is stiff.

Gardening With Herbs had another interesting recipe made with rose water:

CARAWAY AND ROSE COOKIES

½ lb. of butter
½ lb. of fine sugar
½ of a grated nutmeg
1 lb. sifted flour (four cupfulls)
3 tbls. of caraway seed
2 tbls. of rose water

Rub the butter into the sugar and flour, add nutmeg, caraway seeds, and rose water. Moisten to a stiff dough with water. Let it stand covered for several hours, then roll out into a sheet ¼ inch thick. Cut with a cookie cutter, lay in a well-buttered pan, and bake in a moderate oven until it is light brown in color.

Rosella Clarkson, in her book *Herbs, Their Culture and Uses,* gives a formula for *HONEY OF ROSES:*

Cut off heels of ½ pound sweet scented roses. Mash them with a wooden masher; boil for 15 minutes in 1 pint of water; add 2 lbs. of strained honey and boil down to a

thick syrup. Pour into scalded glass jars and seal.

Mrs. Leyel in *Herbal Delights* tells how ROSE BUTTER was made: Put into a stone jar ¼ pound of butter and cover it entirely with rose petals above and below and leave overnight in a cool place with the lid on. This butter can be used for spreading on very thin bread and after a few rose petals have been placed on the top of the bread it should be delicately rolled, the petals being allowed to protrude at either end.

The above are but a few of the many uses for this ever popular plant. So often today, with our intensely specialized and highly integrated society, it is easy to forget that not so many years ago transportation, communication, and science were such that people had to be more self-reliant and self-sufficient. They had to "make do" with things at hand so it was natural for home remedies and recipes to grow out of this necessity. Many of the flowers we consider as ornamental only were at one time grown for culinary or medicinal purposes—the rose is such an example.

SHARE YOUR GARDEN

By THE LORD'S GARDENER—AAH

Inherent in each of us is a love of flowers, whether it be for wild ones or for the ones of increased size or variegation of color by the hybridizing of some thoughtful, patient gardener. It is this beauty of a harmonious blend of colors on a background of green foliage and lawn that invites a bit more prolonged look at some modest cottage garden. After your garden has achieved the maximum production of good sized blooms, get the thrill of sharing them with someone else.

It takes as much time to prune off the wilted, faded blooms from your rosebushes and other flowers as would be required to pick some when they are just bursting into exotic florescence. Share them with those less fortunate than you are. Share them with some that are confined on beds of pain. There are many flower hungry patients. Every home for the aged, every convalescent home, every sanitorium, and every hospital, has a corps of social workers whose time is devoted to the judicious distribution of flowers.

The American Red Cross has a large staff of employees at the enormous Fitzsimons Army Hospital who will gladly accept your flower contributions. With all you generously contribute, there will not be half enough to go around among those brave boys who sacrificed their health for your freedom and our democracy. Even rescue missions and the county jail have some whose hearts might be reached by a flower. It might remind them of their boyhood home and mother. A bed of flowers isn't worth a dime till you share it with someone.

The following poem by James S. Kelly seems to carry a similar message:

MY GARDEN

I worked in my garden a while today,
And God was there; and I heard Him say:
Those roses of yours and the columbine,
With the jasmine sprouts that now entwine
The old south wall near the kitchen door,

Are very pretty; but let's look them o'er
And see if we can't separate
The things you do from the part I take.
You planted the seed, the Master said,
You watered and tilled the lower bed,
But did you make the small seeds grow
To raise their heads in the morning glow
And draw their substance from the morning sun
That gives them strength to carry on?
Did you paint the blossoms of blue and gold
Did you give them fragrance, or did you mold
The shape and form of each lovely bloom,
Or did I do that and give you room
To work with me in the garden? He said.
I turned, and the voice I heard had fled.
But the words He spoke disturbed me much,
For I thought I gave those plants the touch
That makes them grow in a vigorous way.
But he spoke again and I heard Him say:
Your garden and mine, and this puzzled me
For I had learning and felt I should know
What seed I should plant and how they should grow
But this new doctrine of God and me
Changed that garden; and now I see
That it no longer is my own,
But God's and mine, and ours alone;
So, now when I plant, I have God for a guide
And we work that garden side by side.

Something new on the market that we feel readers should know about are some recent products by Hyponex. Most of you know Hyponex as a reliable house plant food. Now Hyponex is distributing Caronex, a charcoal soil purifier; Mosonex, specially prepared peat moss; Panonex, a planter mix; Solonex, soil conditioner and aerator; Nibonex, a rabbit repellent; and Syfonex, a siphon mixer for spraying and several other products of equal interest. They are attractively packaged in convenient sizes.

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JUNIOR GREEN THUMB

NEW CLOTHES FOR BOB

Bob was twelve years old and lived on a farm. He hated to start back to school this year since his clothes were getting worn out. The crops hadn't been good, so Bob's Dad couldn't buy any new clothes.

Bob had heard his grandfather tell how the farm was covered with trees fifty years ago.



Most of the remaining trees were cut & burned to clear the land for farming.





Some of the trees were cut down to build the house and the barn.



The south forty acres had been left in timber, but then a forest fire destroyed it. Campers from the city were building campfires for picnics. The forest fire was started either from an untended campfire



or a carelessly tossed match. Now there wasn't even any lumber to sell.

Bob could hardly keep his mind on English or history. Then one day he saw a book called "American Conservation" lying on his teacher's desk. When he opened it, he saw a picture of some land that looked just like his Dad's farm.



Bob asked Miss Sanders, the teacher, if he might borrow the book. He took it home, and he and his Dad read the description under the picture.

"With the natural cover protection of trees gone, sheet erosion takes place. This consists of gradual washing away of a thin layer of top soil by rapid run-off of rain water. In time the land is infertile and cut by gullies. Nothing will grow."

"That sounds just like our farm, Dad," Bob said "What can be done?"



Bob's Dad read on, "Contour tillage, if used early, stops erosion.

"What's contour tillage?" Bob asked.

"Contour tillage is planting the crop rows round and round the hills instead of straight across. Then the rain water runs along the furrows of the rows instead of down the hill. Look at the picture."



Then under the next picture, Bob read. "If the erosion has completely ruined the land, it can only be saved by replanting trees and grasses. Dad, do you suppose the farm could be saved by contour tillage and replanting?"

"Well, Son, it's certainly worth a try. Let's go out and see if we can give the land new clothes, as well as you."



Written and Illustrated by Virginia Sena

BOTANICAL GARDENS AND CONSERVATION

By ROBERT L. WOERNER, Director, Botanical Garden Foundation

A botanical garden or arboretum has a definite part in the conservation of natural resources. The ways in which a botanical garden should serve the public have been listed by several writers. It would be well to quote three of the services listed in the 1949 Yearbook of Agriculture by Larrimer and Schreiner. These clearly define the role of a botanical garden in conservation:

"To conserve the native plant life of the region.

To test and introduce new plants and varieties in order to increase the productivity, economic importance, and beauty of the region.

To cooperate with related institutions and agencies for the extension of knowledge."

Native vegetation is usually preserved in a portion of every botanical garden or arboretum where space and site conditions permit. The indigenous plants of the area are displayed in a natural state, which might be a mixed forest stand in the humid temperate sections of the country, or in the Denver area, vegetation of the foothill or prairie type. The trees, shrubs, vines, and groundcovers of these preserves are labeled for easy identification. Often nature trails are provided through these areas to point out, by signs and trailside information points, the many other interesting features of such a plant association. Within these natural preserves there are usually many species of birds, reptiles, mammals, and other forms of wildlife which welcome this protected habitat. Industrial expansion, housing projects, and agriculture utilize all of the available land for miles around most large cities. Often botanical gardens and arboretums can offer the only bit of land in its natural state that is within reach of all city dwellers.

In Denver, the location of the botanical garden in City Park does not permit the establishment of an area devoted to the preservation of native vegetation. For years, all of its acreage has been developed as an intensively used park, and a natural stand could only be imitated by reconstruction. Any plants that are added to the display gardens will be for the convenience of the public in learning about them, and to complete the botanical collections. The true conservation of native plants will be carried out in other areas where good examples of the many different types of plant associations that occur so close to Denver can be preserved intact. These preserves will be provided with labels and signs for the enlightenment of the public.

A second phase of botanical activity also aids in conservation. This is the program of testing and introducing new species and varieties of plants. Much has to be done in this field within the state of Colorado. In addition to determining the best ornamental trees and shrubs for landscaping use, the program will also be concerned with the testing and introduction of new plants for windbreaks, erosion control, and wildlife cover and food. In this manner the botanical garden can help in halting the waste of natural resources. It can also be of service in the replacement of forest stands that have been ravaged by fire, insects, and

disease, or harvested in lumbering operations. New strains of trees are being developed which show resistance to disease. Other hybrids show greatly increased growth making them desirable for reforestation. The botanical garden may take part in research in these areas, or it may serve to bring to the Denver area these new plants of great economic importance.

A third function of a botanical garden is the dissemination of plant knowledge to the public. In addition to the educational displays in the gardens, the staff of the garden will cooperate with experimental stations, Horticulture House, the county agents, and others concerned with conservation education. The knowledge accrued in testing plants in the garden will be published and used as material for lectures. Instructions on planting and cultivating plants which increase or protect the productivity and economic importance of an area will be offered through demonstrations, lectures, and leaflets, so that fullest use can be made of these conservation aids.

These then, are the ways in which a botanical garden can aid the cause of conservation. The Botanical Garden Foundation of Denver is a new agency in the early stages of development. The services which it can offer to the public will be limited at first, but as the plants are expanded and new areas are developed during the next few years, it will be in a position to fulfill its role in the best utilization of the natural resources of the area.

NEW ADDITIONS TO THE BOTANIC GARDEN

During the past few months, the staff of the botanical garden has been able to prepare some new beds for additional plants near the iris garden.

Five new iris beds have been prepared and four of them have been planted to intermediate, dwarf, and pumila iris varieties. The two beds for intermediate iris contain 92 plants of 19 varieties. The dwarf iris bed has been filled with 73 varieties. The pumila bed, also planted this year, contains about 80 varieties. These new iris, a gift of Region 20 of the American Iris Society, will advance the season of bloom, with the dwarf and pumila types flowering in early May, followed by the intermediates some two weeks later. The tall bearded varieties bloom from late May into the early part of June.

Eight new varieties of the tall bearded type have been added to the older plantings.

Society members contributing iris to the garden this fall include O. T. Baker, Dr. J. R. Durrance, Mr. and Mrs. Chas. P. Gordon, Jr., Everett Long and Mrs. James Waring.

Several new chrysanthemum beds have been prepared near the outer periphery of the iris "rainbow." At this writing the planting of 600 or more hardy chrysanthemums in these beds is anticipated. The "mums" will add fall color and interest to the iris garden area along with the buddleia planting in the outermost semi-circle.

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THE FIRST YEAR AS HISTORY AND AS SPRING-BOARD

By Dr. E. H. Brunquist

Chairman's remarks at the Botany Club's first anniversary meeting early in July.

The Botany Club celebrates its first birthday this evening. It has had the advantage of a helpful group of sponsors and advisers, including Mrs. Kathleen Crisp, George Kelley, Walter Pesman, Dr. Moras Shubert, Dr. William Weber and—by remote influence—Ruth Ashton Nelson. We are grateful to these, as well as to the backbone-members of the Club.

The first meeting was held June 7, 1955 with Dr. Shubert as host in his laboratory at the University of Denver, and with 18 in attendance. Two or three of the early meetings of the Club were held at the Swingle Laboratories at 3830 Adams Street, but we have met now for some time at Horticulture House, headquarters of the Colorado Forestry and Horticulture Association. Although we have "qualified" for this privilege by seeing to it that at least two-thirds of our members are also members of the Association, we feel definitely in debt to that organization. Attendance at evening meetings has averaged between 10 and 15.

We are unshackelled by a constitution, or even formally elected officers. Secretary Marjori Shepherd is the only member with a title of any kind. Dr. Brunquist has been chief conspirator only when he couldn't find someone else to function in that capacity.

We are above all democratic, and the membership is free to organize in a more formal way if and when it so desires. It would seem desirable to have a regularly elected Treasurer, by this fall at least. We should have a Trip Recorder, too.

Expenditures have been mainly for mailing, mimeographing, and gasoline (for out-of-town speakers) but the Secretary and other members have usually used the telephone for notices of meetings.

There has been a regular evening meeting on the second Monday of the month, except in August, and one or more field trips a month during the green times of the year. There was one 3-day camping trip to the region of Gothic, Colorado, last summer. Plant material has been at hand for every indoor meeting to date. Active participation by the members of the group has been a major objective, although not always extensively achieved. This will be the first meeting devoted mainly to looking at pictures.

I suggest that it would be something of a disgrace if we do not start soon to *advance the cause of Rocky Mountain botany,* in some small way, at least. Professionals like Harrington at Fort Collins, Weber at Boulder, Mrs. Nelson at Colorado Springs, and Shubert in Denver are prepared to suggest the *ways;* in fact, we already know of a couple.

As I size up the situation, our interest is not exclusively in classification, but at least as much in plant ecology and plant distributions—geographically and altitudinally. And we want to know more of how far back in geologic time our common plant families probably originated, and of their interrelationships in evolution. I suspect that we would enjoy knowing more about how plants feed and breathe, and of the details of their superiority over animals in the matter of capturing energy from the environment. We might well compile a list of our spe-

cific curiosities, and assign topics to be reported on by members at an occasional meeting. We should not be dependent upon what may be called *spoon feeding* when there is too much of it. We need the teaching of sponsors and speakers, but we can also profit from exploring for information on our own, in books and out-of-doors.

Here within reach are plants in alluring number and variety. Here are mysteries enough for several lifetimes; unsolved problems of how certain plants came, of how they were able to survive when others did not, of how extensively they have invaded certain environments.

"So much to know, so little time to learn," to search,
Before our chance is up.
So much of ages gone to read,
So much to guess of years to come;
And a green, wide world of plants to wander in!
For how much more should we ask?

SHADE TREE STUDY CONTINUES

The Shade Tree Committee of the Association has held three meetings since the last report appeared in these columns. There has been an average attendance of fifteen, including representatives from the Colorado Federation of Garden Clubs and the Denver Federation of Women's Clubs.

At the August 13th meeting, a resolution was adopted which recommended to the Mayor that the narrow strip of land along the south side of the East 32nd Avenue Parkway be sold to the adjacent property owners at a nominal cost on condition that they take care of it. The resolution also opposed a modification of the 25 foot building set-back line along this Parkway.

The resolution was sent to the Mayor for consideration and was acknowledged in a nice letter.

At the September 10th meeting a general policy statement, prepared by a committee consisting of Robert Woerner, M. Walter Pesman, and Anrold Perreten, was adopted.

This resolution recommended to the Mayor that the Shade Tree Committee be given the opportunity to study, in the preliminary stages, proposed changes as may require the removal of trees or alterations in parking strips, landscaped areas, or parks in connection with proposed traffic arterials or city construction plans.

Where the removal of trees is necessary in such changes, the resolution recommends that the city engineer include in the estimate, funds to provide for new tree planting and landscaping.

In designing cloverleaf approaches, roadside grading, etc., provisions for their landscaping is recommended.

The value of existing trees should be called to the attention of engineers and planners.

At the September 20th meeting, Earl Sinnamon gave a graphic picture of what is happening to Denver street trees as a result of drought, insects, disease, and lack of attention.

George Stadler also reviewed ordinances and regulation pertaining to Denver trees.

FRED R. JOHNSON, *reporter*



STOP AND THINK

By WILLIAM LUCKING

LET'S give some thought to Trees. The Pioneers did a very good job planting the cottonwood. They realized the plains area needed trees. They planted them on their ranches, along ditches, in their fields, and even planted groves of them for shelter for their cattle.

Now, just what is happening to the cottonwoods? Drought for one thing is taking its toll. Thirty years ago, all of the creeks east of the mountains were running with water. Now at the present time you will find nearly all of them dry. These creeks supplied a place for the cottonwoods to grow. Now that they are drying up, you will find the cottonwoods are dying from drought and disease. Once a cottonwood is weakened from drought, then the canker disease sets in and finishes it off. Stop and think if the cottonwoods should vanish from this area. Just what will you replace them with. It has been said, "Oh it is just an old cottonwood, cut it down." Think first, let's try and save as many of these old fellows as we can.

Now let's take a look at some of the other trees and see what is happening. We live in a beautiful city, a city of trees, a city that is growing by leaps and bounds. If one were to go up in an airplane, you can see just where the older part of the city is for the trees form an outline of that part of the city. Trees help make a city, they are part of our life. There are wonderful boulevards of trees in the City of Denver. But look what is happening; progress steps in and destroys a great number of these trees. As a matter of fact, whole boulevards of them are being destroyed. Again let's stop and think. Are we planting back new boulevards to compensate for the ones that are being destroyed? There are a great number of areas in and around the City of Denver that need the planting of trees.

New home owners should plant more trees. A home is not a home until it is planted and that planting should include—trees. There is a type for every home. We need someone like the past Mayor, Bob Speer, to make the public conscious of planting them.

Again, STOP AND THINK! A tree is a living thing, the gift of God and the friend of Man.

PEEK AT THE MAIL

Dear Mr. Gallavan:

The Corkscrew willow mentioned by Mr. DeBoer is actually the Contorted Hankow, *Salix matsudana tortuosa.*

This comes from China. The only commercial source I know for this is the old Kohankie Nursery in Painsville, Ohio, now Horton Bros. Nursery. However, as they sell only at wholesale, a local dealer would have to order it for anyone interested.

An equally interesting plant is the hazel called Harry Lauder's Walking Stick, *Corydalis tortuosa,* which is sold by Wayside Nurseries, Mentor, Ohio.

The Contorted Hankow Willow grows easily from cuttings as do most willows. I grew one from a slip brought back in a suitcase from California to Chicago. Sincerely,

R. MILTON CARLETON
Research Director, Vaughn's
Garden Research Center

WHO—Landscape Architects
WHAT—A Professional Association
WHERE—Horticulture House
WHEN—September 19, 8:00 P.M.
RESULT—

ROCKY MOUNTAIN ASSOCIATION OF LANDSCAPE ARCHITECTS

A very interesting and unique meeting was held at Horticulture House last September 19 at 8:00 p.m. Thirteen professional landscape architects met and discussed the formation of an association. This is really unique—who would guess there are that many professional people in Denver? Incidentally, I counted more than twenty in Denver who are available and practicing the many phases of landscape architecture.

The interesting and invigorating part of the meeting was the discussion and comments by each and every person present. The normal procedure of forming a group was followed by first picking the name ROCKY MOUNTAIN ASSOCIATION OF LANDSCAPE ARCHITECTS.

Further discussion by the group pointed toward the need for a good public relations program through the media of letters, brochures, articles, exhibitions, lectures, and personal contact promoting the qualifications, abilities, and services of the professional landscape architect. Other points of discussion included a future program to try to promote a school of landscape architecture in Colorado, a committee appointed to study Constitution and Bylaws for the Association, individual dues, types and times of the future meetings, and qualifications for membership.

The following landscape architects attended the meeting, and all of them have the attitude of "let's get started" and not the "let's wait and see what happens."

Do you know what professional services the landscape architect provides for your community?

Respectfully submitted,
Gerald F. Kessler
Secretary

Organizational Committee:
Julia Jane Silverstein
S. R. Deboer
Gerald F. Kessler

NAME	EMPLOYMENT
Julia Andrews	Julia Jane Silverstein
S. R. DeBoer	Private Practice
Carlton B. Goodwin	Harman, O'Donnell & Henninger
Sam L. Huddleston	Private Practice
Edgar A. Johnson	Denver Parks & Recreation
Gerald F. Kessler	Harman, O'Donnell & Henninger
Frank H. Kirch	Harman, O'Donnell & Henninger
Walter M. Pesman	Private Practice
Curtiss A. Pollari	Denver Parks & Recreation
Walter D. Popham	Formerly F.H.A. Land Planner
Donald O. Roos	Denver Public Schools
Julia Jane Silverstein	Private Practice
Edmund Wallace	Denver Parks & Recreation

Fresh herbs and salad greens add zest to winter meals. Among those which thrive under artificial light are parseley, chives, mint, marjoram, basil, cress, and even lettuce.

SEASONAL SUGGESTIONS

By HENRY GESTEFIELD

ADD GRASS SEED TO THIN LAWNS

By the time this is published, it will be too late to seed new lawns, but you may still add some extra seed to your spotted, thin lawn that is overrun with crab grass. Some seed will germinate on warm November days, especially the native, high altitude, red top grass seed which blends with blue grass, is stoloniferous, and a good crab grass "crowder-outer."

CHASE ROOTS DOWN

With the last few waterings, do some deep penetration watering for roots like to grow down deeper in winter. Shallow watering produces shallow side or branch roots that dry up during dry winters. Do not cover lawns with ground compost or fertilizer during winter for it is sure to blow away, but *do* keep the grass several inches taller to help preserve moisture.

KILL YOUR NEXT YEARS INSECTS THIS FALL

If you want fewer aphids and other insect pests next summer, spray the whole yard with 2% chlordane in solution or dust your lawns with 10% D. D. T. This will kill all hibernating insects that winter-over in grass, sod, weeds, trash, fallen leaves, and dandelion crowns.

SOIL PREPARATION IN FALL

If you are planning to put in a new lawn next spring, or are contemplating extensive plantings, it is desirable and good practice to plow, rototill, or spade the ground after a deep watering before freeze-up. Leave the ground rough. The clods will break up and get mellow when they freeze and thaw alternately. This method is also used by smart progressive farmers and produce gardeners.

MULCHING—WHY, WHAT, AND WHEN

Reasons for mulching are several, but the main objects are to preserve an even, moist temperature for the plants to keep them alive, to produce deep root systems, and to keep the ground frozen as long as possible.

Another good reason for mulching is to preserve the moisture put there from the last watering. This will help prevent winter kill and will produce thriftier plants next summer. *Winter kill* is a misnomer, it should be called *sun kill* here in Colorado.

Then too a reason for mulching is that decayed plant matter puts the molds into the soil to create the essential micro organisms which in turn break up the soil minerals for plant food.

Do not burn your leaves and vegetation tops, they belong in the compost pit to use as mulch next year. Too heavy mulching is dangerous, it might smother plants, especially cushion mums and other perennials.

BULBS AND DAHLIAS

There is still time to plant bulbs, provided the freeze up will allow you to plant them deep enough. Cut off the tops of dahlias after they are frozen, dig them with chunks of soil left around roots, dry them in the sun for a few days to kill bacteria and fungus, then store them in a cool frostproof room or in a cool corner of the basement.

WINTER CARE OF ROSES

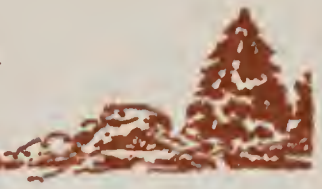
Do not cut back roses in late fall, except new frozen growth. Rather, hill them with soil (soil, sand or loose compost). Give severe cut back in late spring when sap starts rising in stems. This pertains to floribundas and hybrid teas.

Shading or protecting tree bark from sun scald should start in late January.



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The Green Thumb

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The Green Thumb

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The Green Thumb

Vol. 13 DECEMBER, 1956 No. 10

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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Assistant Secretary-Treasurer Mrs. Ruth E. Sauer
Editor Patrick J. Gallavan

CALENDAR OF EVENTS

December 5—Nature on Screen Series, "Land of the Scarlet Macaw," Ernest P. Edwards. Denver Museum of Natural History, 8 p.m.

December 5—Botany Club will meet the first Wednesday in December at 7:30 p.m. Horticulture House.

December 9-10—Lecture Program. "Colorado Through the Seasons," Alfred M. Bailey, Denver Museum of Natural History. Sunday Programs: 2:15 and 4:30 p.m. Monday Programs 6:30 and 8:30 p.m.

December 11-12-13—"Christmas Tree Workshop" sponsored by the Federated Garden Clubs of Colorado, 9:30 a.m., Red Cross Building, Fitzsimons Army Hospital. An invitation is extended to anyone wishing to help in this worthy project. Bring own sandwich, or lunch may be bought in cafeteria.

December 12—Organic Garden Club meets the second Wednesday of each month. 8 p.m. Horticulture House.

December 16-17—Lecture Program, "Europe's Toy Countries," Nicol Smith, Denver Museum of Natural History. Sunday Programs 2:15 and 4:30 p.m. Monday Programs 6:30 and 8:30 p.m.

Green Thumb program, 9 a.m. every Saturday, KLZ 560 on your radio dial. Pat Gallavan, Horticulturist, with Dale Morgan.

THE PERFECT CHRISTMAS GIFT, SEE PAGE 33

PATRICK J. GALLAVAN *Editor* MRS. HELEN FOWLER *Librarian*
MELANIE BROWN, *Asst. Editor and Librarian*
MR. AND MRS. GILBERT SAUER, *Custodians*

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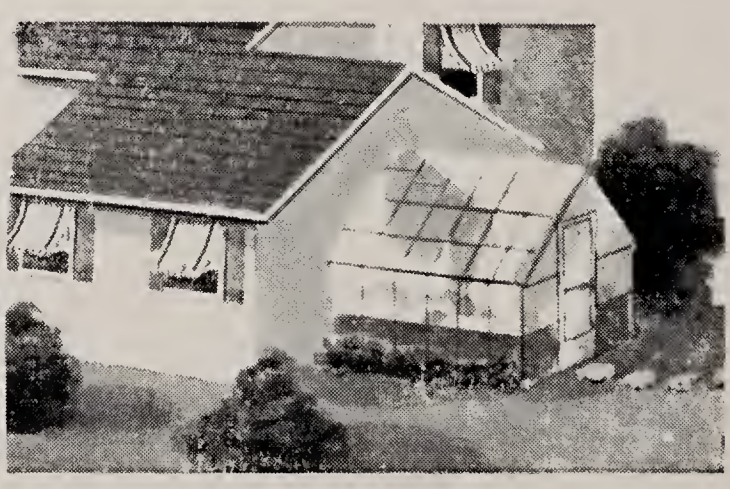
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HIGHLIGHTS OF THE AMERICAN HORTICULTURE CONGRESS

By PATRICK J. GALLAVAN

Perhaps you will recall a note in the July Green Thumb wherein the Association invited the American Horticulture Council to hold its 12th annual congress here in Denver in 1957. Since they accepted this invitation, a Denver delegation, consisting of Earl Sinnamon, George W. Kelly, Robert Woerner, and myself, attended this year's congress held October 20-23 in East Lansing, Michigan.

The Congress took place in Kellog Center, a modern hotel located on the campus of Michigan State University and used as a training center for students in hotel, institution, and restaurant management. The accommodations, there, were comparable to the Brown.

One hundred and sixteen members were in attendance with most of the Council's 87 member organizations represented by one or more delegates.

The program began Sunday afternoon with a reception where the delegates were introduced and given time to become acquainted. This was followed by the Presidential dinner at 6 p.m. after which Dr. Harold B. Tukey of M. S. U. gave an excellent talk illustrated with kodachrome slides on his recent trip around the world with members of the Atomic Energy Commission. The day's activities culminated with a panel discussion on the effectiveness of horticultural communications in education, public relations, radio and television, bulletins, and books.

Monday started off with a special breakfast for the Garden Writers' Association of America, a group sponsored by the A. H. C. and made up of the writers and editors of most of the horticultural publications in the U. S. Since the majority are members of both groups, they always have a combined meeting.

Next there followed progress reports of the A.H.C. Dr. G. H. M. Lawrence of Cornell University, reported that the A.H.C. had been officially recognized by the International Horticulture Congress, and in the future, delegates of the A.H.C. would be present at meetings of the International group.

Dorothy Nicherson, Agricultural Marketing Service U.S.D.A., revealed that a new wrinkle in the fields of color selection had been developed that would do away with the cumbersome and expensive color charts of the past. They have developed a very compact color fan that contains all the principal colors and their varying hues, so handy and simple that it will probably become a standard flower judging tool. She stated that it would be in production some time next year and at a price that most garden clubs and such could afford.

Reports by the Secretary and Treasurer along with those of the Finance, Nomenclature, and Registration Committees were then given with a final report from the Plant Hardiness Zone Map Committee. Dr. Henry T. Skinner of this group, presented in final form a new and revised Plant Hardiness map which will be printed and distributed in the coming year. While it is much improved over its predecessors, it still doesn't tell the whole story of *our* horticulturally different area.

For lunch Monday, we ate flowers —chrysanthemum dressing, carnation muffins, etc. and then listened to a

witty talk by Kay Savage, Food Editor of the Detroit Free Press entitled "Let's Eat Flowers."

The afternoon was spent touring the campus of M.S.U. with emphasis placed on the landscaping, the botanical garden, and the experimental green houses.

The evening session convened at 7:30 p.m. E. A. Eichstedt, landscape architect from Detroit gave a fascinating talk illustrated with kodachrome slides on the monumental job of landscaping General Motors' new technical center. He was followed by Dr. Fred Meyers from the St. Louis Botanical Garden, who also showed a number of kodachrome slides taken on a recent trip to various nurseries and arboretums in Europe. This concluded the A.H.C. activities for the evening, but the Garden Writers and the American Association of Botanical Gardens and Arboretums then met separately for their annual business meetings.

Tuesday was devoted to 3 minute reports of accomplishments of member organizations and to several short reports of standing committees of the A.H.C.

Since this more or less concluded the congress, except for elections and business meetings, the Denver delegation extended a welcome to next year's Congress, bade their many new-found friends farewell, and started their return trip to Denver.

THE JOHN SWINGLE MEMORIAL FUND

All who knew him will long remember the unselfish devotion John Swingle showed in his efforts to improve our western horticulture. While his main interest was the improvement of our shade trees, he continually emphasized our need for organized research on our problems in all phases of ornamental horticulture, from ground covers and flowers, to shrubs and trees. He realized, as we all do, that "Rocky Mountain horticulture is different" (quoting George Kelly), and he wanted to see research done here at home as a means of solving our problems.

Now here is where each of his friends and all of the friends of gardening and horticulture can at the same time show appreciation for John Swingle's great generosity and also make a sound investment in our horticultural future. A Student Aid fund will be presented to the Colorado A&M College to encourage senior and graduate students who will be working on our problems. Anything from $1.00 up will be welcome, so if you have not already been solicited, won't you send a check right now? Your tax deductible gift should be to the Colorado Forestry and Horticulture Association and designated to the John Swingle Memorial fund. A progress report will be made in forthcoming issues of The Green Thumb.



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CHRISTMAS ARRANGEMENTS





On the right, a low copper container is tightly pyramided with douglas fir and red carnations. A single white candle completes the effect which glows with a Christmas warmth that is lost in this black and white photograph.

The arrangement on the left also uses red carnations and douglas fir, but two colored candles give the height and line softened by the flowers. Skillfully hidden by the evergreens and cones, the container is placed on a diagonally cut pine slab. —by Mr. & Mrs. Ray Turner

The grape is probably the oldest of domesticated fruits. It seems to have been cultivated at the dawn of history and was no rarity even in Noah's time. The grape of history, however, is the wine-bearing grape, probably native to Asia, and has little comparison to the delicious modern table grapes gown in many American backyards.

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SUGGESTIONS FOR THE NOVICE ORCHID GROWER

By VIRGINIA PASTORE AND JOYCE ARNEILL

Many people who do not have a greenhouse often acquire one or more orchid plants when they are blooming. After the flowers have gone the owners seldom know what to do with the plants. Taking our information from ORCHIDS AS HOUSE PLANTS, by Rebecca Northern, we offer the following suggestions:

Usually the above orchids are Cattleyas, and so the first thing to realize is that they will probably bloom only once a year. But the flower is so lovely and lasts so long that the plants are well worth taking care of during the months between.

If you have one of these, put it in a sunny south window for it needs sun and light during the day. Cattleyas can stand hot temperatures up to about 90 degrees during the day, but like it as cool as 60 or 65 degrees at night.

Water your plant only about every 5 to 7 days and then with luke-warm water. This is assuming it is potted in osmunda which should always be moist.

In order to get some humidity in dry homes, stand the plant on a brick or on gravel in a pan of water, but do not have the pot itself in the water. Your plant must always have plenty of fresh air and should have a short drying out period every 24 hours. If the sunlight is too bright and hot, a thin glass curtain will keep the orchid from burning. And if it is very cold at night, the same curtain will protect the orchid from the cold radiation of the glass.

If your plant is in osmunda, feed it only about once a month during its growing period. You can use an orchid fertilizer or Hyponex at half the strength used for other plants. If it is in fir bark, feed it a little more often.



A young cattleya orchid's first bloom

A Cattleya can usually go for a year or two without repotting. Our advice on this subject is to talk to one of the many orchid growers here in Denver before tackling this problem, for it is a different procedure than the one ordinarily employed.

A word of warning! Success with your first orchid will make you want to acquire more and more of them. You might as well face the fact that you will never stop with one. Next will be a wardian case for more humidity, and then a greenhouse is inevitable. You'll find orchid growing an insidious love!

CYPRIPEDIUMS

(The Lady Slipper Orchid)

By MRS. JUDITH MARY KING

To my mind there is no one flower with as many fine qualities as a "Cyp." The flowers last so long in perfect condition that their beauty may be enjoyed either cut or on the plants for at least five weeks.

Cypripediums, or as they are more commonly called, The Lady Slipper Orchid, are easy to raise, and propagate reasonably fast, so I feel they should be more widely grown than they are. There are three separate sections of the Cypripedium group—those that require a cool temperature, those that do their best in a warm atmosphere, and those that many of us in the mountain country know as garden lady slipper orchids.

Let me speak first of the cool-house types. They require a night temperature range of 55 to 60 degrees for best results. However, I have seen them grown well with night temperatures that vary from 50 degrees to 65 degrees. The warm growing Cypripediums do best at night temperatures from 65 to 70. The warm growing "Cyps" are distinguished by their beautifully mottled and vari-colored leaves. They are quite rare and more difficult for the amateur grower. Many of you are well acquainted with the beloved wild Cypripedium of the alpine meadows. If you are fortunate in acquiring a few plants for your garden, plant them in deep shade and a well aerated soil; they are charming beside a shady pool or garden fountain where they can constantly draw on the moisture.



Cypripedium

All "Cyps" require a uniformly moist condition. The plants should never be allowed to dry out. They should be watered twice a week during spring, fall, and winter, and perhaps every other day in the hottest summer months.

Grow your "Cyps" in a shaded location and never leave them exposed to full sunlight for any length of time. In the home they do best in an east or very light north window exposure.

A new potting material called Fir Bark is available in a prepared mix at Folkner's nursery store in Denver. It is easy to use and is long lasting.

Considering all things, Cypripediums are among the easiest of all orchids to grow. Their natural flowering season comes in the winter months, and their long lasting flowers of beautiful and remarkable coloring are usually available for the holiday season. More than any other cultivated orchid, the cool and aloof Cypripedium is a developed taste, and once they have caught your fancy, their appeal is long and fascinating. In my greenhouse there are many varieties of orchids; the elegant Cattleyas, the dancing doll Oncidiums, snow white moth orchids or Phalaenopsis, exotic Vandas and stately Cymbidiums, but when someone asks me which is my favorite—without hesitation it's easy to say "my Cypripediums." And it's strange—I think they know it.

AN ORCHID GREENHOUSE USING PLASTIC

By MR. AND MRS. S. J. KNIGHT

Dreams of several years standing were suddenly precipitated into action three years ago. We had long talked of growing orchids, but had done nothing about building a greenhouse until my wife presented me with a wardian case and several orchid plants. It was soon apparent that we could not control the cultural conditions sufficiently in the wardian case so we began making plans for a greenhouse.

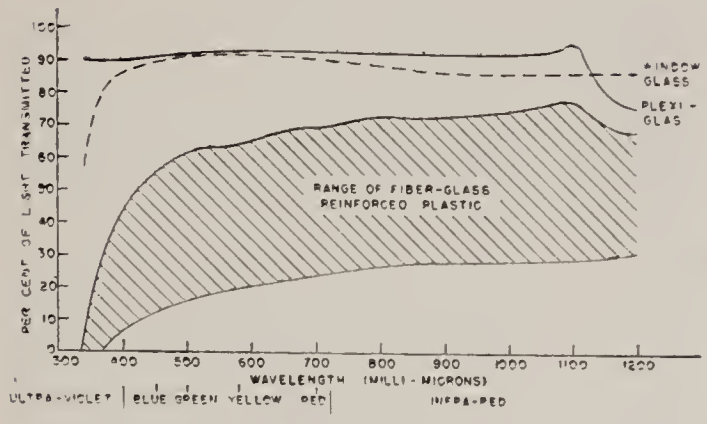
We investigated several available materials for construction, and the possible locations for, a greenhouse. During this process we were given a section of an old wood and glass house, but after tearing it down and making a short attempt at salvage, we concluded that the only usable material was the glass.

For the reasons given below, we determined that the material most suitable for our greenhouse was fiber-glass reinforced plastic. Because of the ease of maintenance and less shadow cast by thinner structural sections, we settled on aluminum for the frame.

We selected a site for our greenhouse that would accommodate a 9'x12' lean-to structure attached to our home on one and one-half sides. Since the greenhouse was to enclose an existing kitchen window, we compromised on glass sides with a plastic roof. This solution would provide us with a practically hail-proof greenhouse and still maintain visibility through the sides.

In the course of our reading, we had come across an article[1] on the effect of colored light on plant growth. The fibre-glass reinforced plastic was available in many colors, but no information could be obtained from the various manufacturers on the spectral transmission of their products. Samples of many colors were obtained from several manufacturers and measurements were made with a Beckman Spectrophotometer to determine the transmission at various wave lengths of light. The range of our results is plotted in Figure 1. Since too many curves were run to show in such a small figure, we have indicated only the minimum and maximum curves. All the other plastic samples measured, gave curvices within the shaded area of Figure 1. We had expected the different colors of plastic to pass only a band of wave lengths depending on the color of the plastic. However, a study of Figure 1 will show that all of the fibre-glass reinforced plastics cut off the transmission at approximately the same wave length on the ultra-violet end. This clearly shows that the color of the plastic results from a suspended pigment rather than from a dye. The color of the plastic will have no effect on the plants growing beneath it, but the density of the suspended pigment will effect the total amount of light transmitted. A study of Figure 1 will also show that all of the plastics tested, readily transmit the infra-red wave lengths. This is undesirable in that it requires cooling to maintain suitable conditions for orchids and also allows considerable heat loss. However, Figure 1 shows that plastic is no worse than glass in this respect. The lack of ultra-violet transmission of plastic is definitely an advantage, since these are the wave lengths that cause burning of orchids. Of the samples we tested, a light blue gave the maximum total transmitted light, exceeding even a transluscent whitish plastic purposely

FIGURE 1
LIGHT TRANSMISSION OF VARIOUS GREENHOUSE MATERIALS



designed for greenhouses, so of course we selected this blue.

Our greenhouse was a "do-it-yourself" project, so we ordered the materials and started digging. Neither of us had ever done much building construction and we learned to lay brick and weld aluminum by the same process—just getting the material and starting in. Standard extruded aluminum shapes were used and cut and fitted with a hacksaw by hand. Most joints were welded, but some were fastened with aluminum machine screws. We have since been told that aluminum can't be welded, but, for those of you who might like to try, we did a very successful job with a simple acetylene-air torch and Eutectic welding rod.

We experienced some difficulty in locating a manufacturer that would make a forced hot air furnace with a stainless steel heat exchanger to withstand the high humidity of an orchid greenhouse. However, we finally located one, had it installed, and combined with several fog nozzles it does an admirable job of heating (fog nozzles required because of the forced air heat). We also equipped the greenhouse with an evaporative cooler to provide both humidity and cool temperatures for the orchids.

Standard size sheets of corrugated fiber-glass reinforced plastic were used. They were cut to fit the roof sections by using an abrasive disc in a regular circular saw. Since the plastic has a much higher strength than glass, very few framing members were required in the roof; this partially compensates for the higher cost of the plastic.

We believe one word of caution is necessary to anyone planning construction of a fiber-glass reinforced plastic greenhouse. We discovered by experiment that glass can be sloped as little as 10° (30° is the usual roof slope of a glass house) and still carry off the condensation collecting on the underside of the roof. However the plastic must be sloped at least 40° (ours is 45°) or the condensation will drip on the plants instead of running down the sides.

Since building our greenhouse, we have learned of some other materials which might be suitable for construction of plastic greenhouses and possibly someone can investigate these. We are listing the known facts about these materials. along with glass for comparison purposes, in Table A. We checked the Lucite or Plexiglas before building our house, and rejected it, but are listing it here for the benefit of others[2]. The polyethylene has been tried in warmer climates where its short life can be tolerated because of the possibility of growing orchids out-of-doors during part of the year. As far as we know, the Mylar is a brand new material that has not been tried. The possibility has been raised that a greenhouse constructed of these latter materials would not be subject to property taxes because of its temporary nature, but check this with your lawyer.

Since we could only work on our greenhouse during our spare time, it took almost two years to construct it. However, it has now been in operation since January and we are very pleased with the results. We have observed excellent growth and bloom of our orchids (and other plants), the new growth looks very healthy, and all the varieties we have tried seem to

be thriving. During the hottest part of the summer, we found it necessary to install temporary bamboo roller blinds for shading on the outside of the glass sides, but no shading was required on the plastic roof.

We are now planning the installation of automatic controls so the greenhouse may be left unattended when necessary.

[1] Philips Technical Review, Vol. 11, No. 2, Aug. '49, pgs. 43-49.

[2] We have just learned of a new type of Plexiglas, resistant to ultra-violet, that is being marketed for outdoor use.

Table A

Material	Light Transmission	Cost	Life	Construction
Glass	See Figure I	28c sq. ft.	Good except for hail	Standard
Plexiglas or Lucite	See Figure I	$1.40 sq. ft.	Questionable — crazes in sun — melts easily — not fireproof.	Same as glass.
Fiberglass Reinforced Plastic	See Figure I	63c to $1.20 sq. ft.	Very good. Many years. Hail-proof. Will not support fire.	High strength — less supporting frame work required. Structuarl materials less than glass house. Cut with abrasive disk.
Polyethylene	Reportedly no ultra-violet	Variable, but inexpensive	Poor. Decomposes under ultra-violet 6-9 months. Hail resistance poor. Not fireproof.	Light frame work. Special lap joints. Cut with scissors.
Mylar	not known	2c to 20c sq. ft.	Good for hail. Resistance to ultra-violet unknown. Not fireproof. Very tough.	Same as polyethylene.

During a lull in the conversation at a well-known garden club member's house, her long suffering husband was heard to say. "I think Delphiniums are the prettiest annuals we have."

"George!" she called down to him, "Confine your remarks to something you know more about."

"The reason I know the Delphinium is an annual," he said, "Is because I pay the bills for it every spring."

The nation's forest industries planted about 240 million seedlings on their lands last year to insure plenty of timber for tomorrow's demands.

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GEORGE A. DRAPER

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MAN MADE MUTATIONS

By E. E. WARREN

Let's start out by assuming that Father Noah saved all living things worth saving from the flood, and that orchids were on the ark's passenger list as well as mammoths, mice, and men. The orchids we enjoy today are the descendants of those. They have undergone many changes in the intervening centuries, some for better and some for worse.

Evolution is a term we can now use for this process without fear of being burned at the stake, and we are referring to the trial and error adaptations that made it possible for some of the plants to survive, until today, environmental changes. This natural evolution takes many, many centuries and the unfolding of such a lengthy drama found no one of us present as Father Noah tenderly beached the first orchid plants, nor shall we be spectators to the closing scenes of the play, unkown eons of time from now (unless man knows when to stop using atoms for weapons). But we *can* read a synopsis of the past in fossils and rock imprisoned plant remains. We can also endeavor to understand the present; and we can try to predict the future, based on our knowledge of the first two eras.

Seed plants pass on their characteristics and qualities, both good and bad, to their children by wrapping a combined pollen grain and egg cell up in a seed. The seed waits for its environment to become favorable before it reproduces the characteristics of its parents in a new plant. In order to see how changes in plants occur, we should get certain key facts established.

The cells of the plant, which are its tiny building blocks, are made up of a semi-liquid matter that man has named protoplasm. This jelly-like matter is alive and is capable of breathing, eating, excreting wastes, and above all of reproducing itself.

The cell has a nucleus or "brain," which is a kind of central control station which guides its activities and probably triggers all of the cell's actions. A mental picture of the nucleus of a cell can be visualized if you think of an egg. The yolk is the nucleus and the white surrounding it, protoplasm, all of which is enclosed by a shell, or as in a cell, a thin membrane.

This nucleus is made up of a special kind of protoplasm, which at times divides into a definite number of strands called chromosomes. When the cell is in a process of splitting in half in order to double its number, the nucleus is in the string-like stage. But when the cell is resting, the nuclear material is all collected in a grainy central body. Each different "kind" of plant has its own special number of chromosomes in the nucleus. For example, orchids have 40 chromosomes, onions have 16, and corn has 10. Crosses between plants and animals must be between very closely related plants with regard to their number of chromosomes. Failure to have the correct number in the new nucleus of a hybrid may be lethal and result in no plant at all.

Each chromosome carries, like beads on a string, special protoplasm particles which determine the various qualities of size, shape, color, vigor, leaf shape, leaf pattern, stem structure, stem height, and literally thousands of other qualities. These protoplasmic bits are named genes and their study is the science of genetics. If something happens to "erase" a few of these genes, the plant will lack the qualities that those particular ones carried. If something happens to increase the number of certain genes, the plant could pos-

sibly have more than its normal share of those qualities.

Our world is being constantly bombarded by cosmic rays from outer space. By chance these rays could and probably do pass through the cells of plants and animals, and it is very likely that in tearing through the cell, the rays knock out certain of these genes. If cells with missing genes are used in seed production or cutting production, the resulting new plant will not be identical to its parents as it does not contain all the protoplasm it was meant to have. If the lost genes were vital to life itself, the seed can produce no plant. If the genes were valuable, the new plant will lack them and be inferior to its parents. If the genes were inhibitors in the parent plant, now their lack in the new one will produce perhaps a better plant of greater use. All of these accidental changes, good, bad, or indifferent, are called mutations. Mutations that appear in this way produce an evolution of form. It has been estimated that 37 out of approximately 75,000 crosses are mutants. The Nectarine, Delicious apple, seedless grape, Navel orange, Shirley poppy, and the Boston fern are all believed to be natural mutations.

These mutations can be produced artificially in a number of ways. We can't tell which genes we are going to knock out, nor can we aim at any specific sets of genes because they are all microscopic. The laboratory worker simply blasts the seed producing organs, or the seed, or the germinal tissue, with X-rays, or more recently with radiations from atomic piles or their radioactive products. Then our worker must be content to sit back and wait through a long and anxious period to see what this deliberately injured tissue will produce. Waiting may take ten years or more in orchids and at least several growing seasons for other plants. A 1956 survey published by the National Academy of Sciences on the *Biological Effects of Atomic Radiation* reports the disturbing facts that these effects of irradiation of plant and animal tissues may not be completely exposed for hundreds of generations. *Recessive* characteristics may remain hidden by favorable *dominant* characteristics for many generations, and then suddenly by a chance meeting with another hidden recessive gene will produce a startling and different quality without warning. This new but undesirable quality is there to stay.

Another method of producing mutations more rapidly than normal is to treat the plant tissues with chemicals. A liquid pressed from the corm of the autumn crocus, *Colchicum autumnale,* appropriately named colchicine, is being used rather widely. This colchicine has long been in use for gout and rheumatism treatments, but plant treatment is comparatively new. Its action is not one of damaging the genes or chromosomes, but it seems to prevent the cells during normal cell division from forming a cell wall between the two new ones. The chromosomes have been divided into halves in preparation for the production of the two new cells and, since no new wall is formed, the cell has twice as many chromosomes as it had before the attempt at division. Obviously if the action can be prolonged until the next time the cell attempts to divide, we will have a cell with four times as many chromosomes as a normal one. Doubling of the number of chromosomes is called diploidy, and doubling this number is called tetraploidy. Recent innovations of snapdragons and petunias carry this term, indicating an increase in chromosome number over the original natural number. If unfavorable genes are present, they also are doubled and represent the "fly-in-the-ointment."

Modern Luther Burbanks have more tools and more background knowledge than ever before, but as yet, no one can predict what qualities will be

gained or lost by such genetic experiments. If valuable qualities are found, they can be preserved and magnified by selection. Or perchance (and this seems unlikely) we may get off on the wrong evolutionary track, and after many centuries of experimentation may welcome another wise Father Noah and another flood to return us to the starting point of a few good, honest, plain, sturdy, simple orchid plants—worth beaching tenderly again on some future Ararat.



CHRISTMAS LIGHT

A warm and friendly sight
No man can be cold to.
A small, warm Christmas light
that asks rich beggar and poor Croesus
to share a drop of wine, a bite;
That simple love may be
Our life's thesis.

— by Charles Limlock



CHRISTMAS TREES

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PRESSED LEAVES AND GARDEN FLOWERS IN PLASTIC

By Clara M. White
(Home Garden Club)

HAVE YOU ever wanted to change or renew that old lampshade but couldn't quite decide what to do with it? Why not make a new cover of plastic mounted leaves and flowers for it? The idea is not new, but there are a great many new and novel applications for pressed leaves and flowers in plastic. Design and arrangement will suggest themselves as work gets under way for the project is not complicated.

Prepare leaves and flowers by placing them between two sheets of facial tissue between the leaves of a book (an old telephone directory serves admirably), place weight on the book and allow at least three days for the leaves and flowers to dry thoroughly. Grasses can be pressed in weighted newspapers. Small flowers such as violas, phlox, larkspur, and sulphur keep their color and texture quite well. Most leaves and flowers dry well and autumn is an excellent time to acquire a wide variety of colors.

The tools required are simple and inexpensive: Tooth picks, paper clips or pincer type clothespins, a paper punch, a sharp knife or pair of scissors, and dividers. Supplies: Plastic glue ("Bond" is very good), waxed paper (to protect working surface), and some wide wrapping paper for patterns. Materials: Plastic or cellulose acetate sheets



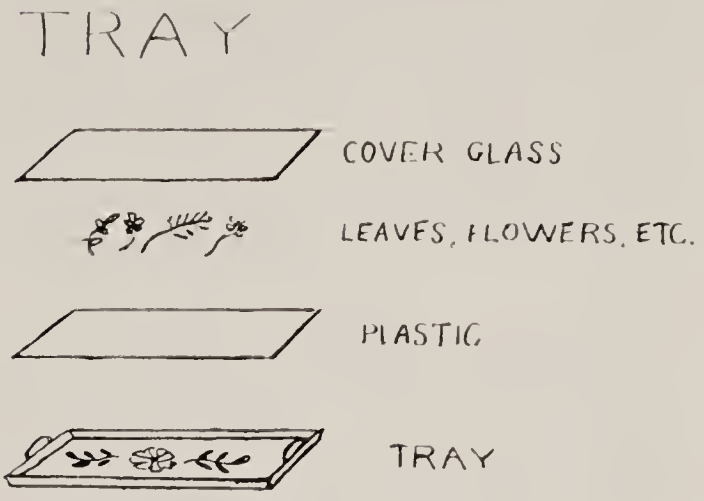
(heavy cellophane), plastic lacing in choice of colors, pressed and dried leaves, grasses, flowers, ferns, vines, etc.

For a lampshade, begin by carefully removing the old covering from the framework of the shade. Trace the outline of the old shade onto the wrapping paper, being careful to make the outline as exact as possible. Clip or pin a double thickness of plastic under the traced pattern and cut out with a sharp knife or scissors, allowing an additional one-quarter inch of length to compensate for the material to be placed between the plastic sheets. If acetate with a frosty side is used, be sure to have the frosty side out. After cutting out, make the punch holes for the lacing with the dividers while the two pieces are pinned together, punch the holes, and separate.

Glue the desired arrangement of leaves and flowers on the outside of the inner piece of plastic. Clip or pin this piece to the wire frame; put outer covering in place (frosty side out) and lace together with plastic lacing.

For a tray, simply cut the plastic to fit the inside of the tray, glue the arrangement in place, and seal cover glass in place with glass cement. Coasters, dish holders, etc., can be made in a similar manner.

Try it sometime. It is amazing how much you will learn about the names, texture and color of plants and grasses.



STARCHED AND SPANGLED SPIREA

By James B. Stewart

Just before Christmas, we cut twigs from the *Spirea arguta* bushes in lengths from about 20 to 24 inches — suitable for use in vases. The twigs are then dipped in fairly thick laundry starch water and sprinkled at once with Christmas tree snow.

I understand making spirea twigs gleam and glitter in winter is an old practice in many parts of the country and no doubt in Europe also.

The branches require no water and last for months. If a glass vase is used, it may be filled with Christmas tree balls for a gay effect with a few stones in bottom of the vase for greater stability.

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THE YULE TABLE

By MELANIE B. BROWN

This month we had several recipes sent in and because each one sparkled with so much holiday goodness, we have included all of them. Lack of space, however, has precluded our usual short history and culture of the herbs used in the recipes, but that information will be given in succeeding issues.

"Copping" methods used in other magazines (are there any other?), we offer the following suggestion for a holiday dinner menu:

Sherry bouillon with croutons
Herb chicken
Creamed spinach
Potatoes bouillon
Tossed salad with vinegar and oil
Dessert: Fresh or frozen pineapple steeped in Kirsch liqueur
Coffee

The bouillon with sherry is probably familiar to everyone, but herb chicken as prepared by Mrs. Don Spencer is an aromatic, savory dish guaranteed to make you the "hostess with the mostest." Mrs. Spencer, by the way, has been asked to prepare this dish for many garden groups when lecturing to them on herbs, and her extensive garden of herbs at 4825 Wadsworth is well worth visiting.

HERB CHICKEN

1 3-3½ lb. frying chicken, disjointed
¼ c. flour
1½ tsp. salt
¼ tsp. pepper
1 onion chopped
1 clove garlic, mashed
½ tsp. mixed herbs (thyme, marjoram and tarragon)
1 c. chicken broth
½ c. medium dry sherry

Blend flour, salt, and pepper in a paper bag and shake two or three pieces of chicken at a time in it. Brown chicken on all sides in fat. Cover while cooking. Remove the pieces from skillet temporarily and saute chopped onion and garlic in the drippings until golden. Return chicken to skillet and scoop sauted onion and garlic over top of meat. Sprinkle with herb mixture. Add ½ cup chicken broth and half of the sherry. Cover skillet and heat over low flame approximately 20 minutes or until chicken is tender. Add more broth as necessary, then just before serving, add the remaining sherry. Serves 3-4.

CREAMED SPINACH

Frozen spinach is so easy and quick. Get the chopped—cook and drain, but save the drained off water (if any) to use in the cream sauce. Saute in butter until golden, the minced onion. Add flour and milk and the spinach water to make a thick cream sauce. Combine the sauce with the cooked finely chopped spinach, season with salt and freshly ground nutmeg to taste. Serve garnished with slices of cooked egg sprinkled with paprika.

POTATOES BOUILLON

Potatoes bouillon are a natural for the menu since the "starter" is bouillon. Keep some aside for the potatoes which are peeled and quartered. For

4 servings use 4 large or 8 small ones. Simmer them until nearly tender in 1½ cups bouillon to which you have added 3 minced shallots or green onions. Drain and make a sauce with what is left of the bouillon with 1 tbs. butter and 1 tbs. flour. Return potatoes to the pot to simmer until tender. Season with salt, paprika, and chopped chives or parsley. This goes particularly well with the gravyless herb chicken. (Recipe courtesy Mrs. Irma Rombauer, *The Joy of Cooking.*)

The tossed salad can be served with oil and tarragon vinegar or with a mixed herb dressing, but it's wise not to have too many exotically flavored dishes for any one meal.

Dessert should be light. Either fresh fruit or a Paris favorite—fresh pineapple (the frozen is again so practical and easy) steeped in Kirsch liqueur.

At a recent Board of Trustees meeting, Mrs. Enos served a dish that *everyone* raved about. Mrs. Enos has generously taken charge of preparing the buffet lunch served to the Board members at their monthly meetings. These conferences, formerly held in the late afternoon, have suddenly skyrocketed in attendance and you'll see why when you try Mrs. Enos' "The Fish Dish." Hope you find the reading and *eating* as delightful as we did!

THE FISH DISH

"There are two musts in this recipe. Change them if you want, but don't blame me.

"The first is the cooking of the halibut. The second, making the sauce thick enough at the start for it will be thinned down by several of the ingredients.

"The frozen slices of halibut are laid in a flat buttered pan and covered, allowing a slight opening to let the steam out. When the fish is cooked enough, a white creamy substance appears on the top of it. Remove this completely as well as the skin and bones of the halibut. This is the trick that makes guests wonder whether they are eating fish or fowl.

For 4 People (more or less)

2 packages frozen halibut
2 cans broken mushrooms and juice (cheaper and better)
2 egg yolks (omit if you're hard pressed)
½ stick butter (or margarin—don't be proud)
1 tsp. salt
1 pinch of paprika, marjoram, and thyme (but really pinch it)
flour (enough for very, very thick sauce)
1 cup sauterne (for cooking, not imbibing)
milk (you judge it this time)

Proceed in this order:

Make sauce with butter, flour, and milk in a double boiler. Add seasonings, egg yolks, mushrooms, ½ cup sauterne and last but not least—the fish. Push fish down into sauce with wooden spoon but don't break it up. Add last ½ cup of sauterne just before serving. Happy landing!"

Miss Jacquelen Anderson, Home Demonstration agent for Denver says:

"The following recipe is ideal for filling the holiday cookie jar, or it may be used to replenish the cookie supply throughout the year.

"Although this particular recipe is of Swedish origin, the Scandinavian countries all have their own variations and it is commonly called 'Poor Man's Cookie.' Whether rich or poor, you will want more of this delicate cardamon flavor which is so typically Scandinavian.

"The cookies are a wonderful addition to that heaping plate of goodies baked especially for holiday guests, and their flavor will be a welcome change from the usual festive sweets.

POOR MAN'S COOKIE

5 egg yolks
2 egg whites

¼ t. cardamon
5 T. sugar
7½ T. heavy cream
2¼ c. flour

"Combine egg yolks and whites; beat until lemon colored. Add the sugar and continue beating until the mixture is thick. Add the cream in small quantities stirring after each addition. The flour, which has been sifted with the cardamon, is blended into the mixture to form a soft dough. Wrap the dough in wax paper and chill in the refrigerator overnight.

"When ready to cook, roll out on a lightly floured board to 1/16 inch thickness. Cut into diamond shapes about 4x2 inches. Make a lengthwise slit in the center and pull one end through the slit.

"Deep fry in preheated deep fryer or deep saucepan at 365° F. for one or two minutes or until golden brown. Turn only once during the frying period and drain slightly before placing on absorbent paper.

"They may be served plain or sprinkled with confectioner's sugar. Store in a tightly covered container."

Christmas baking of all kinds can start as early as November if you put your bakery goods in your deep freeze in tightly covered containers.

Getting into the gastronomic spirit of things, I have a family recipe that harks back to Old World Christmases when trees were decorated very simply with real little candles, homemade ornaments, strings of cranberries and popcorn, and frosted cookies cut in quaint shapes. The dough used is called "Speculaci." It has been a favorite in our family for all occasions and "eats well!"

SPECULACI

4 cups flour sifted
2 cups sugar
1 cup butter
3 eggs
⅛ tsp. cinnamon (or nutmeg if you prefer)
1 grated lemon rind

Cream the butter and sugar together. Add eggs, then the seasoning and flour. Too much flour will toughen the cookies so be careful. Put the dough in the refrigerator over night or until quite cold and stiff. This will make it easier to work. Use only part of the dough at a time, keeping the rest cold in the icebox. Roll out on a floured board until quite thin and cut with various shaped cookie cutters. Bake in a moderate oven until light gold. When cool, decorate with colored frosting made of powdered sugar, milk, a little butter and vegetable coloring. Hang the cookies on the tree and/or serve with desserts.

CHRISTMAS SHOP THE EASY WAY, SEE PAGE 33

A Merry Christmas and A Happy New Year
from
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CHRISTMAS WREATHS

By REBECCA ENOS AND PERSIS OWEN

We started out to tell how to make Della Robbia wreaths for Christmas but then remembered the disadvantages attached to them and switched to a more practical wreath which costs less and lasts longer.

The Della Robbia wreath is made of fruits which will freeze and any bees ambitious enough to venture forth on a warm day will take over. Also the fruit has a tendency to wither in this dry climate.

The second wreath, which you can easily guess is my choice, is made of pine cones of various sizes, dried material, and any non-perishable fruit, if you want a touch of color.

Buy a florist's wire frame which is several inches thick and is made with two pieces of wire instead of just a single flat one. Cover the space between the two circles with chicken wire fastened securely. This wire is put on in order to hold wet spaghnum moss which has been squeezed out of water and forced into the frame. As the moss dries it hardens and will hold any material you want to stick into it.

Now, beg, borrow, or steal several different sizes of pine cones. Put a few nice fat ones on the top of your wreath, and dwindle the size toward the bottom. A nice effect at the top is to add curled pods from the locust tree—perhaps your neighbor won't miss them! Make these look like a big bow-knot tied up there. Hair pins can be used to secure them on to the moss. A couple of pomegranates at the base of the pods will add a nice touch of color.

Stick the little cones into vacant spaces around the circle. This is done more easily when the wreath is flat so that you can pour glue on the spot where the cone is to go. Gluing is for small, light ones only. Reverse some of them in places, putting the broad, flat, end facing out. It will look like a brown rosette.

A long needle and brown crochet cotton will help in tying the larger cones in place. Work the heavy thread between and around the scales leaving one end of the thread loose at the back to tie with the other end that is wrapped around the object. Everything on the wreath *must* be firmly fastened.

So now that you know the method you can start collecting materials "for free." Use your imagination and make something different. A wreath like this will keep for other years with only a bit of changing each time.

Evergreens in your own yard won't mind a little trimming here and there and they would like to come into the Christmas picture too. Start your wreath with them. The blue berries on the junipers are nice and kinnikinnick adds color, but watch out for the cop —he may not have the Christmas spirit!

Last, varnish everything with a coat of real shiny varnish for a finished job —I mean the wreath, not you!

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DECK THE HALLS WITH BOUGHS OF HOLLY

Soon throughout the English-speaking world, strains of familiar Christmas carols will remind us of this joyous season of the year and the part holly plays in our Christmas decorations. It would be a safe wager that more people can identify a plant of holly than any other evergreen. It has been used in many forms of Christmas decoration, and it has been pictured on gift boxes and wrappings of all types.

English holly *(Ilex aquifolium)* is the traditional Christmas green. With its dark, lustrous green leaves with wavy, spine-toothed margins, it provides excellent foliage for wreaths, centerpieces, and other decorative arrangements. Its clusters of red berries add much to its attractiveness. English Holly is grown extensively in "orchards" in the coastal areas of Washington and Oregon where the climate is ideally suited to its cultivation. It is sold by the pound.

American Holly *(Ilex opaca)* has a similar foliage, though a duller, lighter green. The berries are usually borne singly. American Holly is native to the Southeastern United States with a large plantation as far north as New Jersey, which means it is hardier than the English variety and can be used in colder locations. It is grown commercially in the Atlantic Coastal States for Christmas decorations.

The hollies prefer an acid soil and dislike the hot, dry summers, and sunny winters which are characteristic of our climate. Consequently they are not reliable plants for Colorado.

Despite the fact that we cannot grow our own holly here, we can still enjoy it at Christmas time. Florists can supply commercially grown material at a nominal cost for arrangements and decorations, and though our halls are not as pretentious as the famed halls of England, we can still deck them out in a bit of holly to bolster the yuletide spirit.

From Finch Arboretum Newsletter

SEASONAL SUGGESTIONS

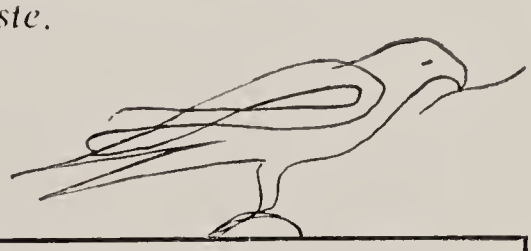
MID-WINTER

This is the time of the year to review the past summer's accomplishments. Did you treat your plants and trees as living things? Did you take care of them as instructed by the laws of nature and the lectures of leading horticulturists? Did you visit our famous Horticulture House library to check up on the differences in horticulture in Colorado. Did you take part in the many Look and Learn Garden Tours? Did you visit the new progressive botanical gardens? Did you join a garden club or a civic improvement club. Or did you let insects, dogs, and vandals destroy what was intended to be a clean, wholesome, and beautiful garden. Have you mulched your dormant plants and newly planted bulbs now that the ground is frozen, and have you watered the transplants? Did you spray the whole area this fall to kill the breeder insects of next summer? Have you protected your tender trees from January-February sun scald? And last but not least, have you provided food areas free from snow for our hard working helpers, the birds?

These questions at the end of each growing season help to organize and further efforts toward better gardens each year. If you can answer "yes" to all the above questions, you have earned the right to settle down to the enjoyment and fun of reading and planning for next spring—a necessary preliminary for lovelier gardens.

Study seed catalogues, garden magazines—particularly *back issues of The Green Thumb* for they will make your plans easier and more realistic. Jot down in a note book that you keep, the garden successes and failures of the summer. It's also a good idea to make a special note to place an early order with reliable Colorado nurseries. Home-grown stock pays for itself! And look over and check your insecticides, for next year might be another "buggy" one.

It's the early bird that catches the worm!—*Geste.*



MERRY CHRISTMAS and A HAPPY NEW YEAR

SCHULHOFF TREE SERVICE

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FEATHERED FESTIVITIES

Here is a Christmas wreath "for the birds," but this time we aren't being facetious! Hang it near a window where everyone in the family can watch the gay feast.

Mrs. Robert H. Lehman (Home Garden Club member) says:

"To make the wreath, bend a wire coat hanger into a circle. Completely cover the circle with evergreens using strong cord to hold them securely in place. Next, make suet pudding rosettes. Melt suet, add and stir in until thick, cornmeal, cereals, popcorn, cranberries, peanuts, or any other foods relished by birds. Pour the mixture into gaily colored nut cups and allow it to harden. Insert a wire or cord through the filled cups to facilitate fastening them to the wreath. Painted pine cones, seed pods, and a bright red weatherproof bow complete the wreath."

By treating your feathered visitors to such a feast, you are not only repaying them in some small measure for the past summer's "debugging" activities in your garden, but you are also getting a head start on the insects for next summer.

Chickadees, those tiny, busy, black-capped winter residents, patrol tree trunks and branches, peering into crevices where spray never reaches, to destroy thousands of the egg masses of tent and canker-worm moths, bark lice, plant lice, leafhoppers, larvae of coddling moths, and other destructive moths and flies. One chickadee can do away with the 138,000 eggs a female cankerworm moth deposits in her 25 day egg-laying period. A pair of thrashers with their young eat at least 50,000 injurious insects during a summer. By offering birds board and shelter, you maintain a host of willing garden helpers that work tirelessly throughout the year. Research workers have estimated that birds save a state seven million dollars annually through the destruction of weed seeds and noxious insects!

The above wreath gives the birds the needed suet in their diet that helps them keep warm and it should be replenished all through the cold months when ice frequently hinders foraging. Another help would be to include in your spring planting plans various fruiting shrubs which also add desirable landscape color. Certain berries attract certain birds, so pick the shrub to fit your choice of birds. The following is a partial list given to Horticulture House by Mrs. Enid Ortman:

CURRANT: Robins, Black Headed Grosbeaks, Finches, Flickers.

COTONEASTER: Waxwings, Evening Grosbeaks.

THIMBLEBERRY: Finches, Robins, Black Headed Grosbeaks, Flickers, Orioles.

RUSSIAN OLIVE: Flickers, Robins, Waxwings, Evening Grosbeaks and others.

BARBERRY: Blue Birds, Evening Grosbeaks, Waxwings.

PRIVET: (Three times as rich as corn) Robins, Flickers, Grosbeaks.

VIBURNUMS: Bluebirds, Waxwings, Flickers, Robins.

WILD GRAPE and WOODBINE: Flickers, Waxwings, and most fruit eaters.

JUNIPERS: Furnish shelter as well as food.

These are just a few suggestions, but if you love our feathered vertebrates or if you love a garden, encourage them by remembering them 12 months out of the year. They will thank you many times over with work and song.

MELANIE B. BROWN

The maple is one of the most versatile trees in the United States with approximately 115 varieties growing in this country.

THE COMEBACK TRAIL

By GLENN KINGHORN
Nurseryman for the Colorado State Game and Fish Department

Everyone likes to see an abundance of wild game. It attracts tourists, out-of-state hunters, and delights both the sportsman and the lover of Nature.

Every so-called conservationist has his ideas of how to conserve these creatures of the wild—and so do the creatures. But it is only in comparatively recent years that those having to do with the conservation of game, have begun to use scientific findings on which to base their actions. They are learning from the animals themselves.

All animal life depends on plant life for its existence, either directly or indirectly. Change the *plant* life of an area and you force the *animal* life to change. Some animals can adjust. Some cannot.

Look at what happened to the prairie chicken, the quail, and the wild turkey! They didn't adjust with the coming of man and his plow. Other species moved to new and more suitable areas, even if they had to move in with their "cousins."

Briefly, food and cover—habitat—determine to a large extent any wildlife conservation program. All animals must have both.

Let's look at one small phase of the giant program of wildlife conservation—that of habitat development for small game birds and animals. In most states of the union planting for one or more species of animal life has been a part of each state's "Federal Aid in Wildlife Restoration" program for several years. In Colorado the Game and Fish Department has been trying to improve living conditions on the plains of Eastern Colorado for pheasants, doves, rabbits, etc., for the past 8 or 9 years.

To make trees, shrubs, legumes, and exotic grasses grow where Nature evidently didn't intend them to grow has presented numerous problems. Many species have been planted and made to grow on the plains of Eastern Colorado for years. The results from those old plantings, plus the results secured with new species and new plantings, are now being studied by several workers in the Department.

Testing species during the drouth periods such as Eastern Colorado has experienced the past five or six years has been very trying. A true picture of the value of a plant cannot be secured until that plant has been established and allowed to grow, approximately to maturity. That often takes five to ten years. Merely to establish a plant has been almost impossible in most areas the past few years.

Definite results cannot be given yet regarding work with some of the lesser-known plants, but those species not commonly used in windbreak and shelterbelt planting which look very promising, include:

Two Caraganas, (commonly called Siberian peatrees) the dwarf or *Caragana pygmea* which only grows about three or four feet tall when mature, and it's sister, *Caragana microphylla*, which will reach six to eight feet in height. They apparently have the same drouth-resistant qualities of the well-known *Caragana arborescens*. The first two, being shorter and denser around the bottom, make much better "skirts" for the outside or windward row of any planting. It is well to note here, as well as in most of the species to be discussed, that they also furnish con-

siderable food for pheasants and other game.

Several of the honeysuckles, particularly the common Tatarian, have shown extra value both for food and for ability to withstand dry weather.

Among the *Prunus* species, the native plum and chokeberries have been used for a number of years, but other species might be added in any wildlife or windbreak planting.

Prunus tenella or dwarf Siberian almond, is a beautiful shrub early in the spring, but it does have the habit of suckering as do plums and chokecherries.

Prunus fruticosa is a little taller, has very nice fruit, and does not sucker.

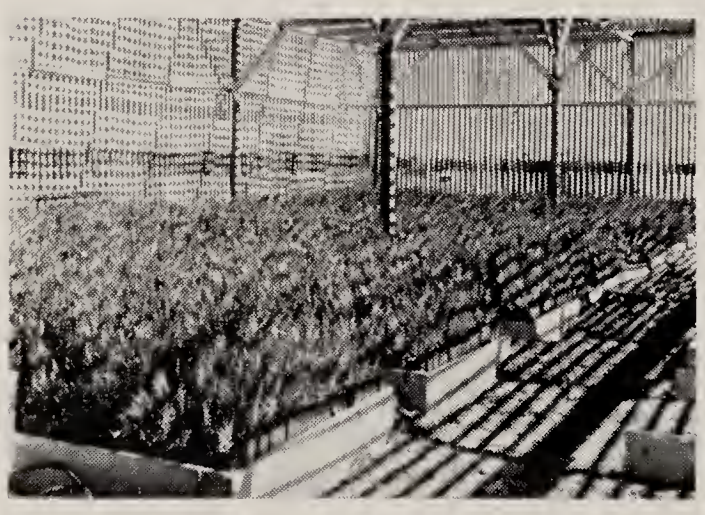
The common sandcherry, *Prunus Besseyi*, has been used very successfully in sandy soils and other places where the alkalinity is not too high. It is quite susceptible to chlorosis or yellowing of the foliage when its roots get into soils too high in lime, a condition quite common in many areas of Eastern Colorado.

The New Mexico elderberry, *Sambuccus coerulea Neo-Mexicana*, is one of the most promising for a number of reasons. For one, it has been growing not over 50 miles east of Denver, on a very dry site, since 1917. Then too, it produces an abundance of berries which attract the birds, also the neighbors, for its fruit makes wonderful pies and other delicacies.

Many more of the shrubs native to various sections of Colorado are also good for use in wildlife plantings, such as the ordinary saltbush, serviceberry, squawbush, and buffaloberry—all produce a lot of food and withstand dry weather quite successfully.

Nothing definite can be reported regarding any of the hawthorns, but two of them—*Crataegus succulenta* and *C. ambigua*—will be excellent additions to plantings providing they can withstand extremely dry weather, for the food values are good and they hold their fruit until late winter or early spring.

All plantings should, of course, have taller trees in them if they are to be of any value as windbreaks. If planted only for game cover, smaller trees would probably be sufficient but any planting should have something in it at least 25 or 30 feet tall. The well-known hackberry—*Celtis occidentalis*—which is native to Colorado, has not been used as much as it should have been. It is not only very long-lived but withstands all kinds of



By potting 2 and 3-year-old evergreens, establishing them in the pots for a year before field planting, the Game and Fish Department is increasing survival from 10% and 15% to as high as 95%.



Western yellow pines grew from 6 in. to 4 and 5 feet in five years, and are still growing although it was so dry that common Russian thistles only grew 6 or 8 inches. Once established, all native evergreens fit well into plains shelterbelts.



Broadleaf trees and shrubs, if planted on the windward side of the evergreens, pile up the winter snows and protect the slower-growing evergreens while adding to their moisture supply.



Several shrubs and smaller trees not only help conserve sandy soil but add materially to the farm family's fruit supply.

weather, and it is much faster growing under ordinary conditions than commonly believed.

Among the smaller trees which are proving desirable are several of the species crabapples. It would be too expensive to use grafted or budded trees, but several of the most drouth-resistant varieties of crabapples do come true from seed.

No planting, either for windbreak, shelterbelt, or protection for wildlife, should be made without including at least one or more rows of our native evergreens.

The common Rocky Mountain redcedar, which is really a juniper, is one of the best and one of the surest for planting. The western yellow pine—*Pinus ponderosa*—does very well on the plains as does the smaller pinon pine, but the latter is a slower grower.

As with several of the trees and shrubs, getting evergreens established has proved the main drawback in their use. The Game and Fish Department has started an experiment using potted seedlings in an effort to get them established more successfully in field plantings. This practice of planting the small seedlings in tarpaper pots and keeping them in shadehouses for at least one year to get them well established before taking them to the field, was started by the Forest Service and the Soil Conservation Service a number of years ago. It would seem to be too expensive a method, but from preliminary results it appears to be far more economical in establishing a windbreak than to continue with extreme losses from bare-root planting.

Much more could be written regarding the use of vines, several legumes, and a large number of grasses, all of which are valuable in supplying food, nesting, and escape cover for wildlife. But those subjects will be left for another time when more is known about their true values.

Most Colorado nurserymen know about all of the species discussed above and if they do not have them this year, perhaps they will get them another year if ordered ahead of time.

Ed. note: Mr. Kinghorn is in charge of the Department's Experimental Nursery at Fort Collins.

FOR CHRISTMAS ALL THROUGH THE YEAR, SEE PAGE 33

KENNETH'S CHRISTMAS PRESENT

By VIRGINIA SENA

Kenneth stared out the window at the roof tops and neon signs. Not a tree or a patch of green grass could be seen. Kenneth wished there were a park across the street as there was at school. Even some plants on the window sill would help to brighten the apartment. Then he thought of the geranium plants in his room at school. They had ruffled leaves and bright red flowers. Say, that would be a good Christmas present for Mother. But where could he get a geranium plant here in the city? Besides, Christmas was only four days away.

Kenneth counted his money. He had spent all but seventy-six cents. His allowance wasn't due until next week, and it was only fifty cents. That wasn't a bad allowance, though, for a ten-year-old.

That night Kenneth fell asleep wondering how he could get a geranium plant for Mother's Christmas. There just didn't seem to be any way in the remaining four days.

The next day snow fell. The geranium plants on the school room window sill looked so bright against the snowy outside. When Kenneth left school, he walked through the park. The snow crunched under his feet. But in the streets it was already dirty and slushy from the cars. There was an alley in the middle of the block, and here the snow was still fresh. So, Kenneth walked through the crunching snow in the alley. As he walked he tried to think of a way to get a geranium plant for Mother. Christmas was only three days away.

Suddenly Kenneth saw a greenhouse in a yard. One, two, three—eight geranium plants could be seen through the glass sides of the greenhouse. A man was in the greenhouse. Would he sell Kenneth a geranium plant for seventy-six cents?

Kenneth crossed the snowy yard and knocked on the greenhouse door. The man came and opened the door. He had gray hair and stooped shoulders and must have been very old.

"Hello," Kenneth greeted, looking up at him. "Would you sell me one of your geranium plants for seventy-six cents?"

"Can't, son." The man shook his head. "They don't belong to me. Besides, geranium plants this size bring maybe two, three dollars."

He started to close the door. Kenneth looked at the geranium plants and swallowed hard.

"Could I come in and just look at them?" he asked.

So Kenneth went into the greenhouse. The geranium plants were bigger and brighter than those at school. Kenneth could just imagine how cheery one would look on the window sill at home.

Then he had an idea.

"Say, Mister, could I work for one of these geraniums? There are three days left before Christmas, and I could come every night after school."

The man frowned and scratched his head. "Well, I don't know. Still, there's a heap of extra work right now. Come around tomorrow night and we'll see."

That night Kenneth told his Mother that he had a job after school and would be late getting home.

"A job?" his Mother asked in surprise. "What kind of job is it?"

"It's a surprise. You'll find out on Christmas."

Kenneth looked out the window at the roof tops and smoking chimneys and signs. He was sure his Mother would like the geranium plant very much.

The next night when Kenneth arrived at the greenhouse, Mr. Coring, the greenhouse man, was nowhere to be seen. But the geraniums were still there. For a minute, Kenneth was afraid he wouldn't get one for Christmas. There were only two days left after today. Then he saw a snow shovel leaning against the greenhouse door. More snow had fallen and the walks were only partly cleaned.

Well, the walks need shoveling, Kenneth thought. I'll just finish them. So he shoveled and shoveled and scraped and shoveled. The yard was very big. There were walks from the greenhouse to the big house and from the big house to the garage and from the garage to the greenhouse. By the time he finished, the sun was going down.

Kenneth took the shovel back to the greenhouse, and there was Mr. Coring.

"Well, well, Kenneth," Mr. Coring exclaimed, "you've made yourself very useful. Was wondering how I'd get those walks cleared before sundown."

Kenneth grinned and said, "I'll see you tomorrow night."

"Fine, Kenneth, I'll be here. Had to go on a last minute errand tonight. Shouldn't happen again."

The following night Kenneth helped Mr. Corning in the greenhouse. There were dozens and dozens of shallow wooden boxes of little plants to be watered. Mr. Coring explained that these were called 'flats' and that young plants were growing in them.

Bigger plants in pots had to be watered, too. Then there were cans of water with cuttings of plants, and Kenneth had to make sure none of them were getting dry. These little cuttings were growing roots. When they grew big enough, Mr. Coring would plant them in the flat boxes.

"What are you going to do with all these plants?" Kenneth asked after the watering was finished.

"They'll go into the garden in the spring. You come by in the summer and see the fine gardens I have."

Then Kenneth picked out a fine big geranium plant with three red flowers. He could take it home tomorrow night.

The next day after school Kenneth rushed over to the greenhouse. This was the day he could take the geranium home.

When he walked up to the greenhouse, he thought he was having a bad dream. The geranium plants were gone!

Kenneth went into the greenhouse, but he couldn't find them anywhere. Mr. Coring was gone, too. Kenneth felt like sitting down and crying. But he didn't. Instead he went outside and looked in the yard and around the big house for Mr. Coring.

Then the back door opened and Mr. Coring came out.

"Hello there, Kenneth. Your plant is all wrapped and ready."

The plants had all been moved into the big house for Christmas—all except Kenneth's. Carrying it triumphantly home he put it on the window sill where he removed the brown wrapping. There stood the wonderful, bright green plant with its brilliant red flowers, awaiting Mother's joyous surprise.

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A DAY ON A BIRD COUNT

By JOHN L. CHAPIN

AFTER an early breakfast and a 15 mile drive, Leonard Licht and I arrived at the cut in the Hogback made by Turkey Creek in the predawn half-light of the day after Christmas. We were to spend the day participating in the Christmas Bird Count which the Colorado Bird Club conducts annually in a 15 mile diameter circle southwest of Denver. After unsuccessfully listening for Horned Owls we drove south to the next Hogback cut where we could hear Song Sparrows and a Pheasant but no Owls. It was cold as we drove up Turkey Creek Canyon past Indian Hills and Tiny Town. We parked the car on a siding as the sun rose, illuminating a grove of Douglas Fir heavy with cones.

As we opened the car door we could hear Siskins and, a moment later, a flock of Red Crossbills flew into the Douglas Firs. Within a few minutes we had seen and heard several dozen Siskins, Pygmy Nuthatches, Mountain Chickadees, Steller's Jays, Red-breasted Nuthatches, and more Crossbills. By placing 2 separate fingers in the mouth and sucking, we were able to 'squeak' the Chickadees closer but were disappointed to find that the flock contained no Kinglets. As we were getting ready to leave, a croak made us look up at 2 Ravens flying over the clearing.

We continued along Route 285 to the junction with the old road and turned toward Tiny Town. Here we could drive slowly or stop without fear of obstructing traffic. We counted several Steller's Jays flying across the road and stopped to investigate a flock of Sparrows in a willow thicket. They were Tree Sparrows, higher than they usually occur. The next stop was for Juncos. This flock was predominantly White-wing with a smattering of Gray-headed along with both subspecies of Oregon Juncos.

We found that it was very cold in the shade even with our heavy clothing so, in our slow drive to Tiny Town, we stopped only in sunny spots except when we saw something special. A flock of moderately large birds resembling Crows disappeared behind a hill. We speeded up to get another look at them around the next curve. A quick look with the telescope showed they were Nutcrackers which were at an exceptionally low altitude. Each stop produced more Siskins and Red-breasted Nuthatches, both of which were unusually common. Probably this winter represented the peak of each of their cycles of abundance. Here we picked up a Downy Woodpecker and some Solitaires.

After a cup of coffee in Tiny Town, we covered Indian Hills where we found more of the same species but not so commonly. We added Cassin's Finch and White-breasted Nuthatch. We left the mountains with 18 out of our goal of 50 species.

During the drive to the plains we kept the windows closed to warm up. We stopped to examine a grove of oak and to eat a sandwich and in doing so found a Gray Shrike, Scrub Jay, and Canyon Wren along with Flicker, Magpie and Robin. At the Hogback we added Spotted Towhee, Evening Grosbeak, Black-capped Chickadees, Goldfinches, and White-crowned Sparrows. We had a good start and reached the plains with 29 species. After getting permission, we crossed a field to a plum thicket along Little Turkey Creek. Leonard and I walked along opposite banks flushing

Tree Sparrows, Meadowlarks, and Pheasants but none of the hoped-for Long-eared Owls. On the return trip I took the creekbed. This was the better method for we flushed 3 Long-ears. By now it was warming up and we removed our coats.

Driving east we added a Red-tailed Hawk and stopped at the Federal Correctional Institution pond where we had found a Glaucous Gull last year. It was rather disappointing since we found only Mallards, Gadwalls, and Pintails along with Ring-billed Gull, Redwings, Starlings, and House Sparrows.

After finding a Killdeer where Bear Creek Road crosses Bear Creek, we secured permission to enter a posted marsh on Estes Road where, after much squeeking and tramping, we found a Swamp Sparrow and a Long-billed Marsh Wren along with the usual Song Sparrows. Shortly after this we found a Sparrow Hawk, some House Finches, and a Fox Sparrow in a brush pile along Bear Creek.

Crawling through a thicket on one's hands and knees with someone watching from the outside is an accepted procedure for finding Winter Wrens, but this time it did not work. It was now mid-afternoon and we counted our species. We had 46 out of our goal of 50 species and, having covered our territory, decided to retrace our steps. We returned to the Hogback where number 47, a Golden Eagle, flew along the ridge to sit on a rock ahead of us. Birds had been quiet along Bear Creek but now in late afternoon a diverse flock of White-crowned Sparrows, Chickadees, Evening Grosbeaks, and a Towhee were noisy and came when we squeeked in the Little Turkey Creek cut in the Hogback.

Driving eastward again, we found a Short-eared Owl on a fencepost near the racetrack. This made 48 species. The Platte River at Bellview had a Kingfisher for 49 and some Brewer's Blackbirds for 50 species, so our goal was reached.

It was not yet quite dark so we returned to Pierce Road and Bear Creek to look for Harris' Sparrow that we had found there a few weeks before. We were unsuccessful, but as we crossed Bear Creek on Sheridan, I saw a motion out of the corner of my eye. We investigated this and found it was a Dipper just below the falls. This was a bonus bird and brought the total to 51 species.

At the post-count supper gathering, where the count participants revealed the highpoints of the day, we found that the DeMent family had added Great Blue Heron, Lewis' Woodpecker, and Snipe near Littleton. John Flavin and Larry Crowley who covered the Ken Caryl Ranch and Marston Lake had found the expected surface ducks, including Wood Duck, but not Shoveller. They found Hooded Merganser but lacked several of the diving ducks. However they had had a good day and contributed Prairie Falcon, Screech Owl, Cedar Waxwing, and Loggerhead Shrike. Bob Glover and Ranson Stone found both Golden and Bald Eagles as well as Goshawk and Sharp-shinned Hawk in the Deer Creek area. Ferd Kleinschnitz and Ben Pfretschner reported Hairy Woodpeckers and Mourning Doves along with a Horned Owl from Waterton as did the Marsh family and the Bayliss' from the Plum Creek area of the Platte River. Sadie Morrison and Phyllis McRae had found Crows and a Harris' Sparrow at Turkey Creek. The payoff came when Don Thatcher and Ed McKee reported that their large party had found a Mockingbird at Morrison. They also had a flock of Rosy Finches and the only Brown Creepers of the count.

Our 8 parties had found a total of 83 species of birds.

SHADE TREE COMMITTEE

The last report of the Shade Tree Committee in the October-November issue of The Green Thumb noted the various points of a resolution sent to the Mayor for his consideration. To keep our members up-to-date on the activities of the committee, we present the Mayor's reply for we feel it is an indication of our progress:

Dear Mr. Johnson:

In reply to your letter and the Street and Shade Tree Committee of Denver, I would like to make the following comments:

1. In the future, the City Engineer's office will make every effort to review in advance proposed plans which may have some effect on Denver's trees. The Parks and Recreation Department concurs that this issue should be discussed by you with the City Engineer's office.

2. In the future, we will make every effort to include cost estimate for funds to provide for new tree plantings and landscape areas, where feasible.

3. The State Highway Department has a landscape program for the Valley Highway. We are most anxious to add beauty to utility in the construction of new streets and will endeavor to provide the necessary landscaping in future projects.

4. The City Engineer says that he is fully aware of the value of the many existing trees and will, in the future, take more cognizance of their preservation and/or replacement. I would like to point out, however, that in many cases it is virtually impossible and extremely uneconomical to twist circulation plans around existing landscaping.

I have endeavored to comment on each of the four points raised by your resolution. I trust that this declaration of policy will satisfy the members of your group. I would like to emphasize further, that the entire City Administration is completely aware of the value of good landscaping and proper tree planting in the beautification of our city. You may rest assured, therefore, that we shall at all times cooperate with you to the best of our ability in obtaining the objectives you have outlined.

Yours very truly,
W. F. Nicholson
Mayor

At our last meeting the Sam Brown oaks were discussed, and a motion was passed to send a resolution to the County Commissioners in the counties surrounding Denver, asking them to scrutinize carefully all subdivision plans submitted to them in the future for unwarranted tree removals. It is hoped that this resolution will prevent any repetition of the Sam Brown Oak incident.

Rhubarb, commonly grown in American gardens, originated as an Asiatic herb. Planted in good soil and not disturbed, it will grow and produce food for many years.

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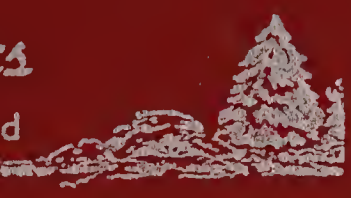
Clyde Learned who has brought in 50 memberships!

Mrs. John Newman, Mrs. Bernice Petersen, Mrs. Randall Hughes, our three faithful stand-bys (all of the Home Garden Club), who always cheerfully say "yes" to such tedious jobs as telephoning renewal reminders, or any other time-consuming, thankless tasks.



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